

5.0 SOIL INVESTIGATION

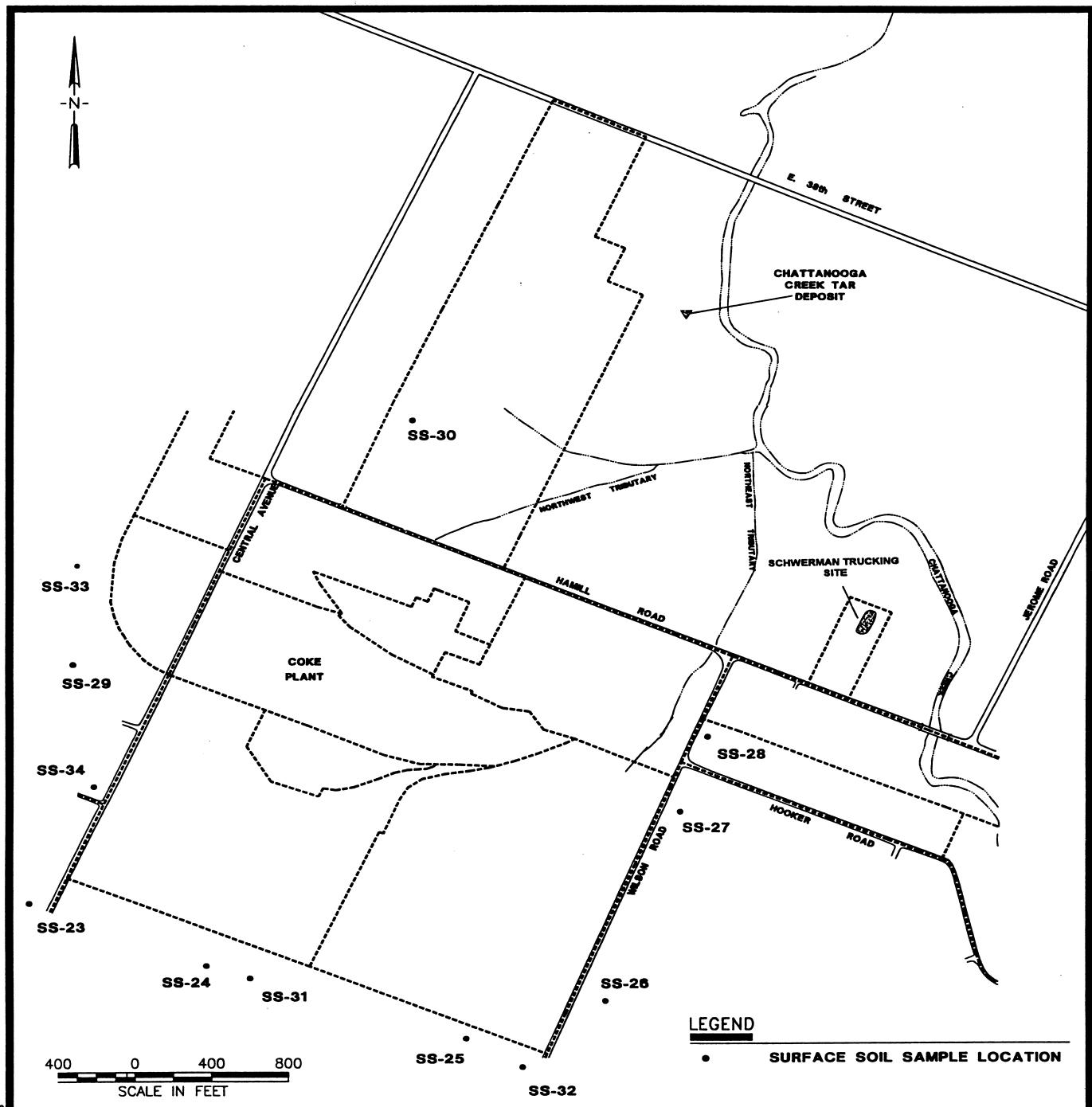
5.1

PURPOSE AND SCOPE

Soil sampling was conducted at the coke plant and CCTD source areas, as well as in the residential areas along the southwest side of Chattanooga Creek, to determine the nature and extent of soil contamination in these areas. In addition, soil samples were collected at the Landes Property in August 1996 and along the Northeast Tributary in December 1996 for further characterization in these area.

Background surface and subsurface soil samples were collected for use in a statistical analysis of the concentrations of naturally occurring inorganic constituents, and the presence of background concentrations of SVOCs and pesticides/PCBs in surface soil. The locations of the 12 surface soil samples (and 1 duplicate) collected for background analysis are shown in **Figure 5-1**. Ten subsurface soil samples (and 1 duplicate) were collected from the 4 borings shown in **Figure 5-2**. As shown in this figure, the depths of the subsurface soil samples ranged from 5 feet to 25 feet.

At the coke plant, 20 surface soil samples and 12 subsurface soil samples were collected from areas selected based on past land use, as determined from historical maps, or other indications of potential contamination. The locations of the samples are shown in **Figures 5-3** and **5-4**, respectively. The rationale for selecting each subsurface and surface soil sample location at the coke plant is listed in **Table 5-1**. Generally, one surface soil sample was collected from the same location as each of the soil borings. Subsurface soil samples were collected at 5-foot intervals until the water table or bedrock was encountered. The depths of the subsurface samples ranged from 5 to 19 feet. At eight locations, only one sample, from a depth of 5 feet, was collected due to the relatively shallow water table. At one location (SB-6), only one sample, from a depth of 19 feet, was collected. That sample was collected with an angle boring beneath an underground storage tank (UST) and was designated to be collected from beneath the bottom of the UST.



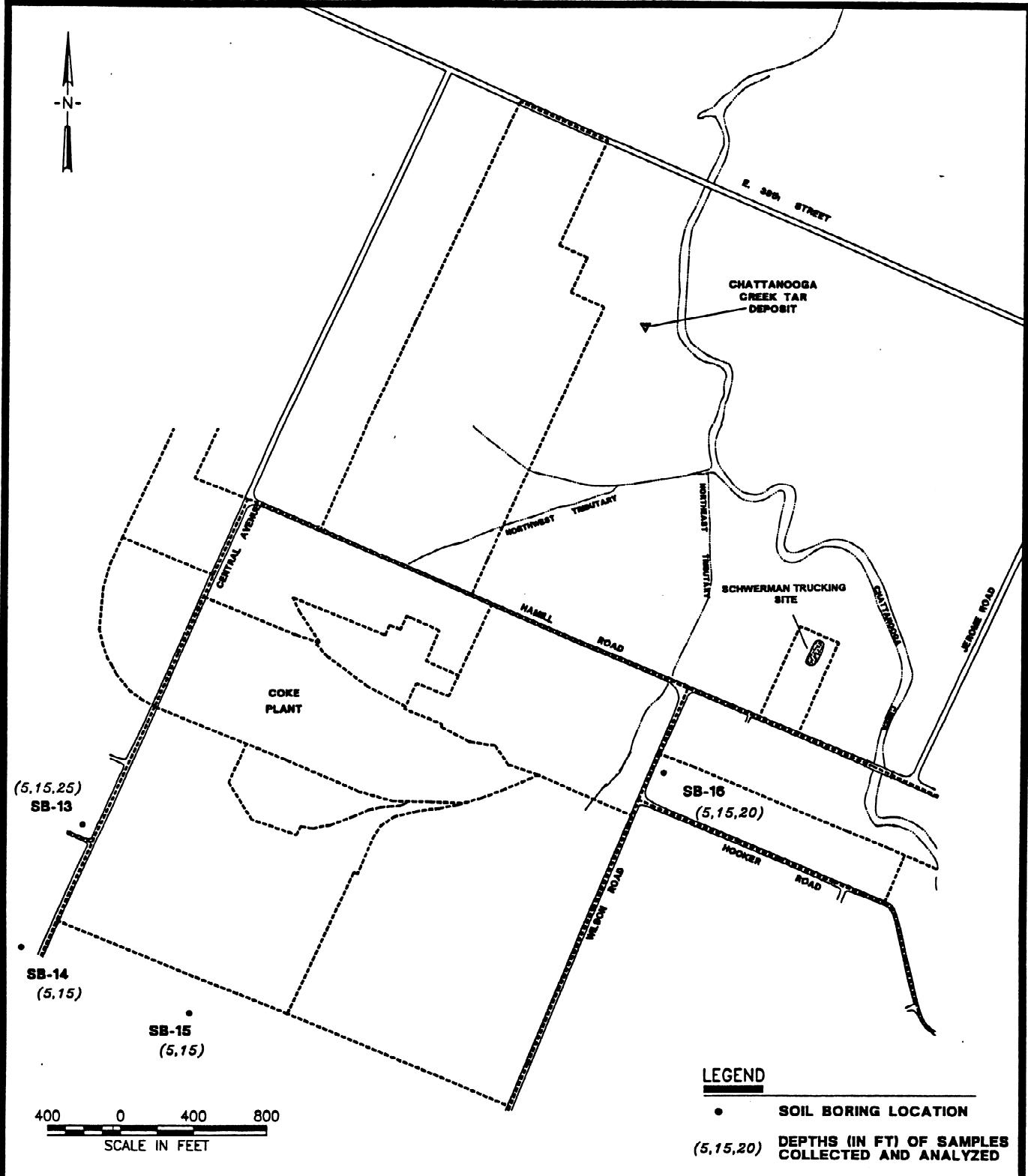
SURFACE SOIL SAMPLE LOCATIONS - BACKGROUND

SS_RA/008/96JUN97

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Tennessee Products Site
Chattanooga, Tennessee

FIGURE No. 5-1



SS RA/29JUL96/800

SOIL BORING LOCATIONS - BACKGROUND

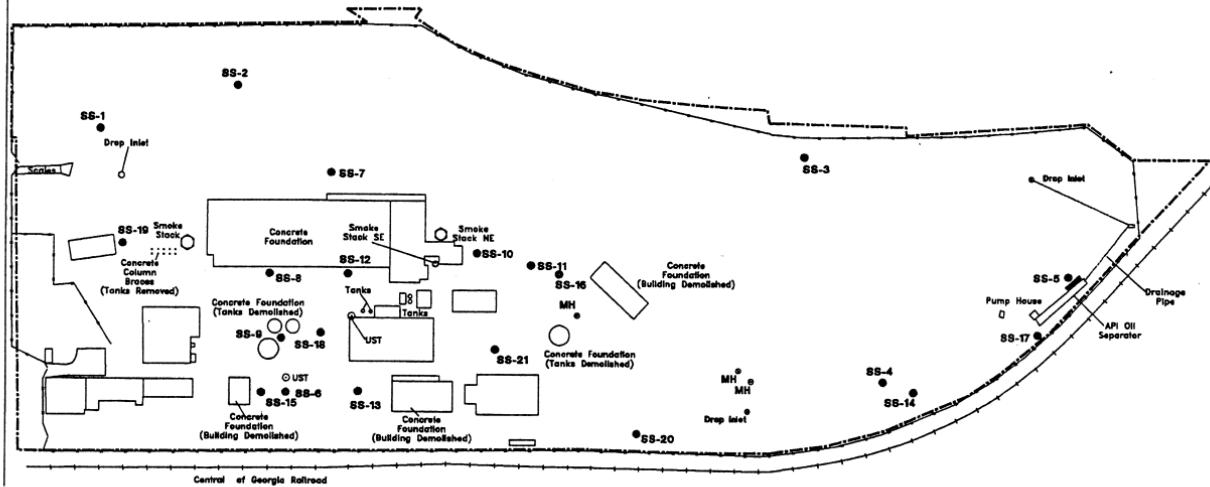
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Tennessee Products Site
Chattanooga, Tennessee

FIGURE No. 5-2

W. 47th St.

Central Avenue



LEGEND

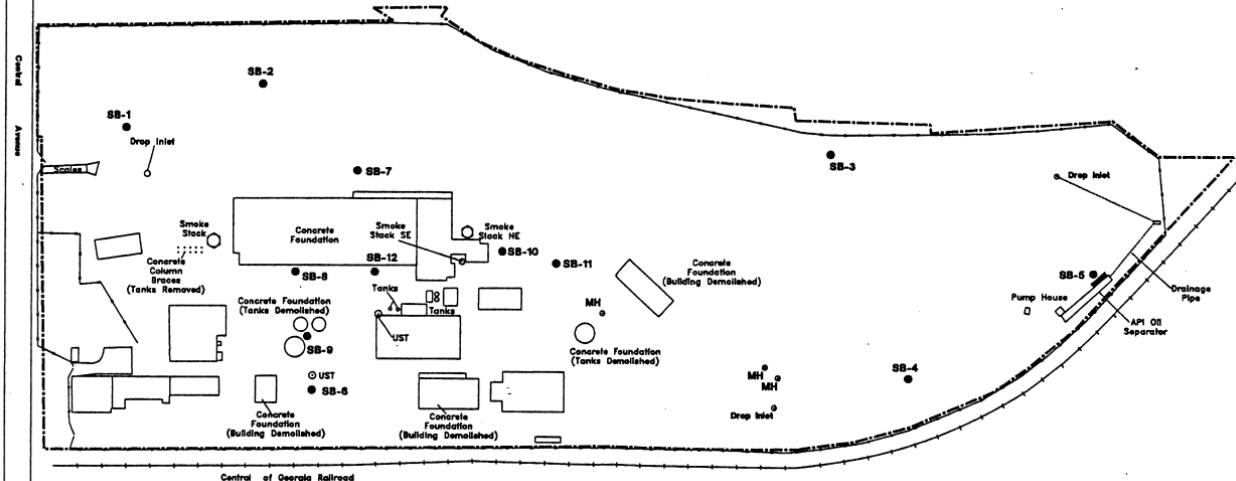
- MH ● Manholes/Drop Inlets
- Underground Storage Tank
- SS-12 ● Surface Soil Samples
- Coke Plant Boundary
- Railroad
- Fence

80 0 80 160
SCALE IN FEET

SURFACE SOIL SAMPLE LOCATIONS - COKE PLANT

Tennessee Products Site
Chattanooga, Tennessee

W. 47th St



LEGEND

- MH ○ Manholes/Drop Inlets
- Underground Storage Tank
- SB-12 ● Soil Boring locations
- Coke Plant Boundary
- Railroad
- Fence

80 0 80 160
SCALE IN FEET

RI SOIL BORING LOCATIONS - COKE PLANT

Tennessee Products Site
Chattanooga, Tennessee

TABLE 5-1

SOIL SAMPLE LOCATION RATIONALE - COKE PLANT
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

SOIL SAMPLE(S)	RATIONALE
SB1/SS1	Coke/Coal Storage Area
SB2/SS2	Coke/Coal Storage Area
SB3/SS3	Coke/Coal Storage Area
SB4/SS4	Coke/Coal Storage Area
SB5/SS5	Proximity to API Oil/Water Separator Area
SB6/SS6	Proximity to UST
SB7/SS7	Proximity to Coke Ovens
SB8/SS8	Proximity to Coke Ovens
SB9/SS9	Proximity to Above-Ground Storage Tanks
SB10/SS10	Proximity to Coke Ovens
SB11/SS11	Proximity to Light Oil Building
SB12/SS12	Proximity to Coke Ovens
SS13	Proximity to Former Oxide Box
SS14	Blue-green Staining on Soil
SS15	Oil House Area
SS16	Benzol Tank Area
SS17	Diversion Ditch, Oil/Water Separator
SS18	Paint Hood Area
SS19	Locomotive Repair Shop Area
SS21	Acid Tank Area

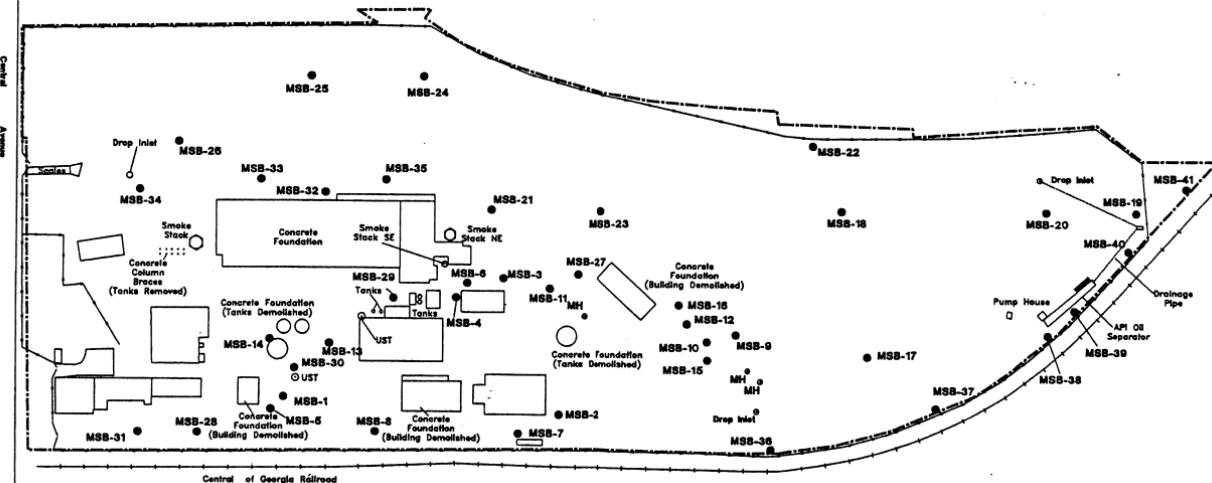
Analytical data collected during this RI were evaluated along with soil analytical data from the *Post Removal Baseline Assessment Report* (Mead, 1995) performed for the Mead Corporation. The Mead study included collection of 83 soil samples from the 41 locations shown in **Figure 5-5**. A sample from surface to two feet below surface was collected at all locations. Deeper samples were selected for analysis based on field screening, visual, or olfactory evidence of contamination. The deepest soil sample collected in the Mead study was from a depth of 32 feet; however, the majority were collected from the upper 20 feet of soil.

At the ST Site, 22 surface soil samples were collected from the soil immediately adjacent to the waste material for onsite immunoassay screening for total PAHs. The locations of an additional eight surface soil samples, collected for analysis by an offsite laboratory, were selected based on the results of the onsite immunoassay screening. The locations all soil samples at the ST Site are shown in **Figure 5-6**.

The CCTD is located in the floodplain of Chattanooga Creek, within a former meander of Chattanooga Creek. This former meander area is frequently flooded. Soil sampling in this area was conducted on a grid basis, centered on the tar deposit (see **Figure 5-7**), to determine the nature and extent of contamination and to characterize the potential migration pathways. A total of 18 surface soil samples were collected from within the meander. The locations were based on a grid with a spacing of 200 feet. The separation between the two easternmost lines was 150 feet so that the easternmost grid line is generally along the creek bank.

Surface soil sampling locations in the residential areas along Chattanooga Creek were selected in consultation with EPA. These sampling locations, shown in **Figure 5-8** and listed in **Table 5-2**, are within areas that have been flooded by Chattanooga Creek as determined by discussions with EPA or residents of the area. The samples were collected to determine if contamination in the creek has been deposited in these areas during periods of flooding.

W. 47th SL



60 0 80 160
SCALE IN FEET

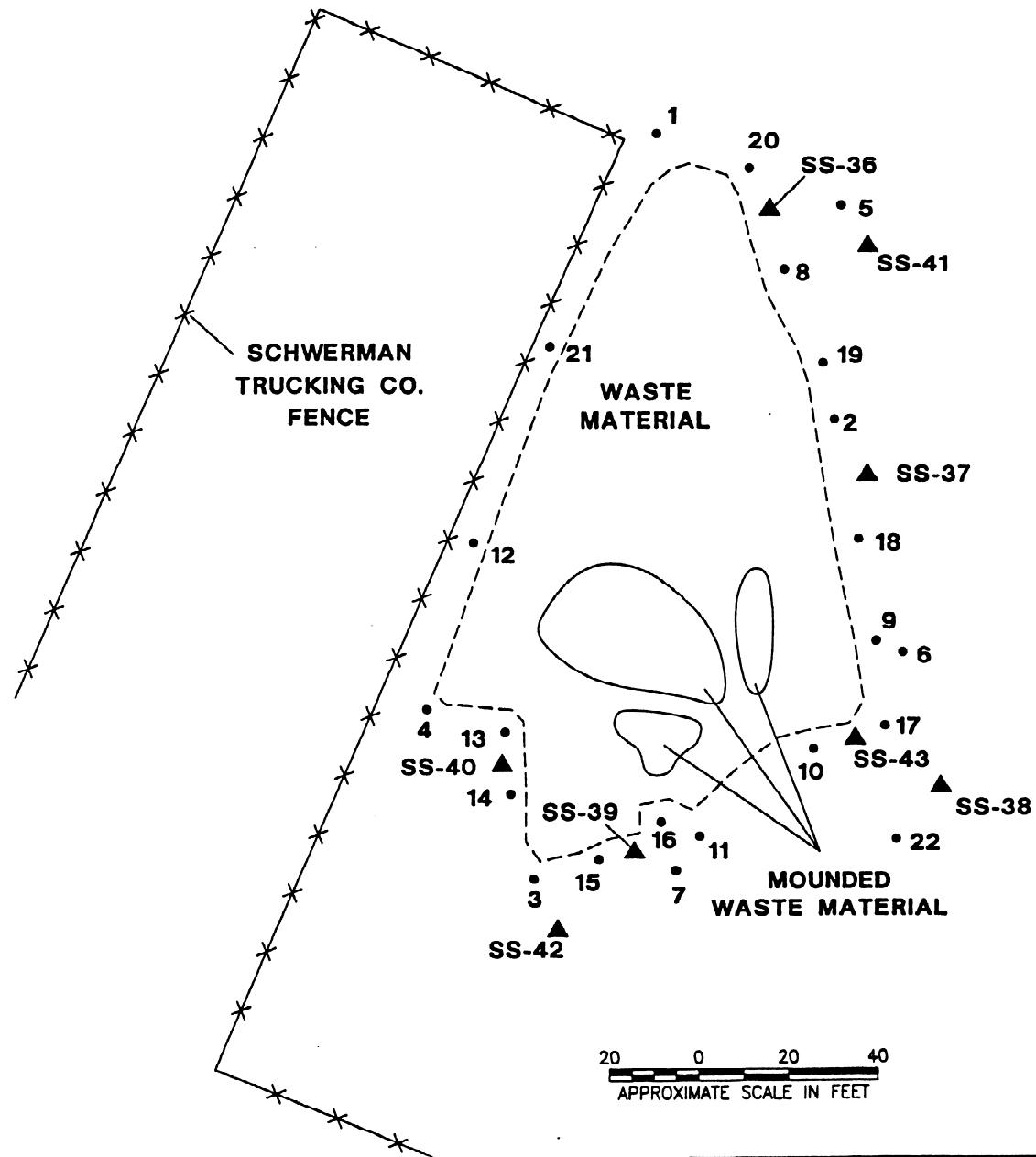
MEAD SOIL BORING LOCATIONS - COKE PLANT

Tennessee Products Site
Chattanooga, Tennessee

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LEGEND

- SURFACE SOIL IMMUNOASSAY SAMPLE
- ▲ SURFACE SOIL LAB SAMPLE



**SURFACE SOIL SAMPLE LOCATIONS -
SCHWERMAN TRUCKING SITE**

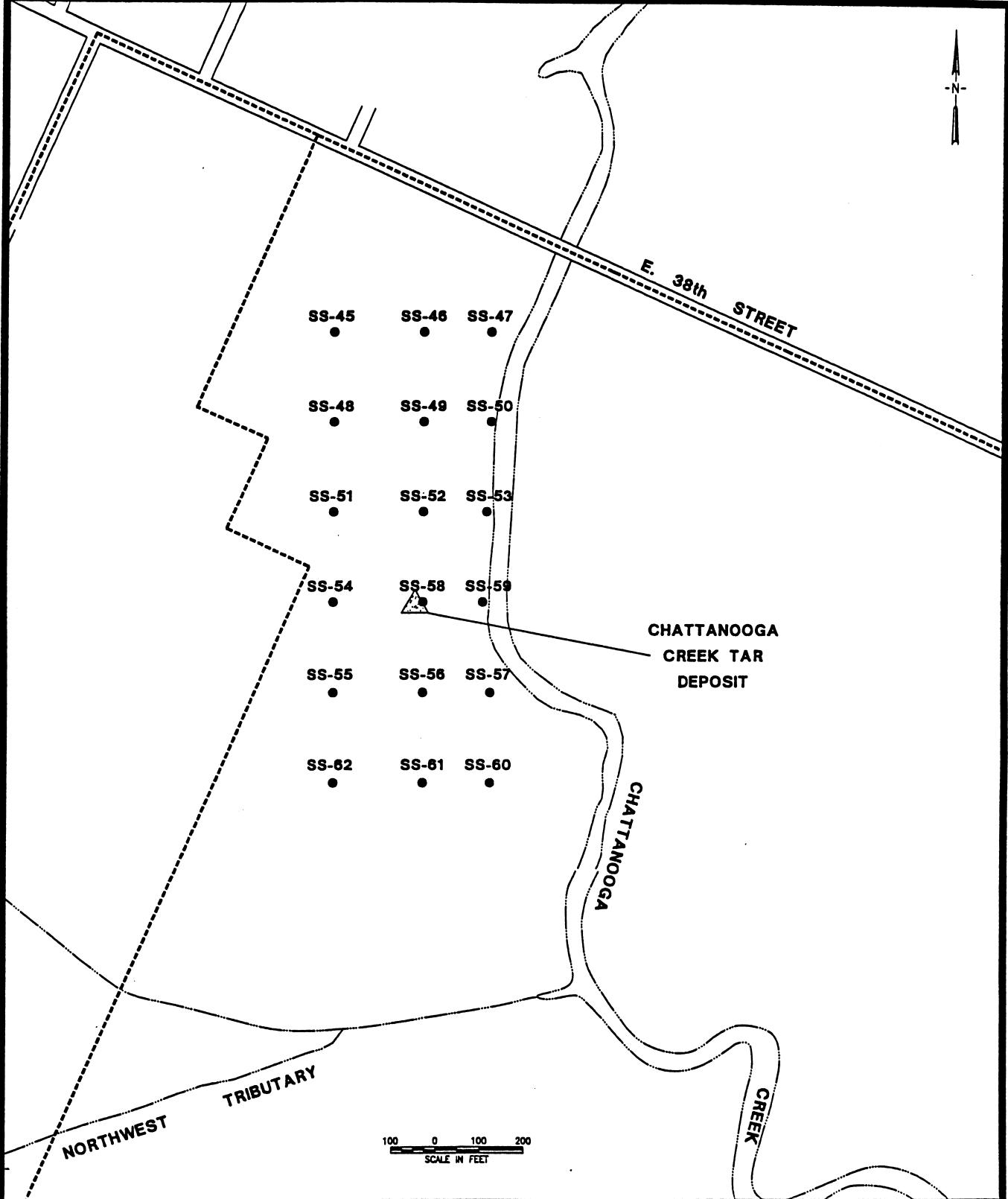


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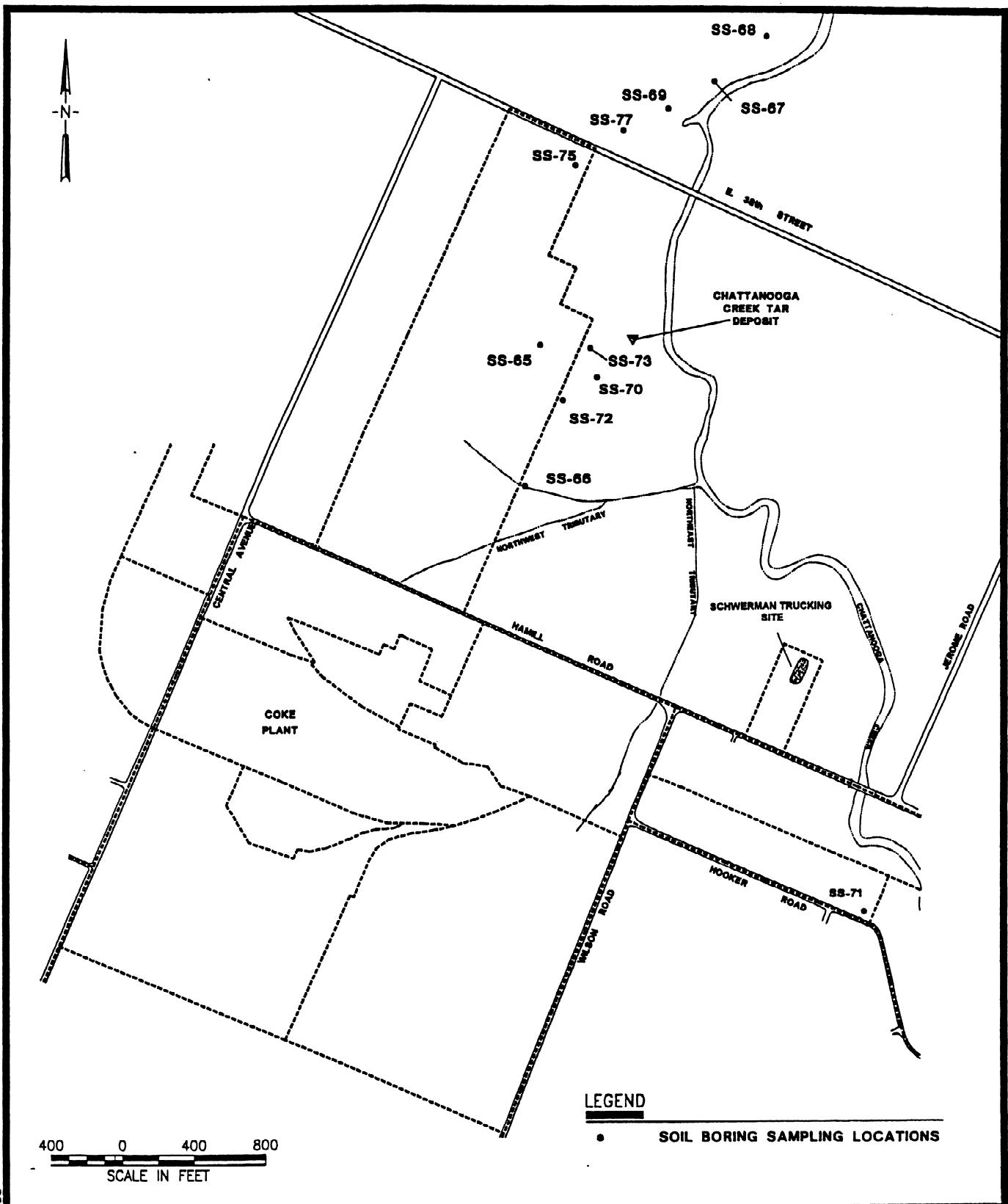
Tennessee Products Site
Chattanooga, Tennessee

FIGURE No. 5-6

N



SURFACE SOIL SAMPLE LOCATIONS - CHATTANOOGA CREEK TAR DEPOSIT



SURFACE SOIL SAMPLE LOCATIONS - RESIDENTIAL AREAS

Tennessee Products Site
Chattanooga, Tennessee

CDM FEDERAL PROGRAMS CORPORATION
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FIGURE No. 5-8

TABLE 5-2

**LOCATION OF SURFACE SOIL SAMPLES COLLECTED IN RESIDENTIAL AREAS
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

SAMPLE	LOCATION
SS-65	4103-A Polk Avenue
SS-66	4218 Polk Avenue
SS-67	Alton Park Junior High school (east yard, along fence)
SS-68	Alton Park Junior High school (east yard, along fence)
SS-69	3712 Carl Avenue
SS-70	Polk Avenue, North of Quinn Chapel
SS-71	Early Childhood Family Education Center playground
SS-72	4206 Polk Avenue
SS-73	4110 Polk Avenue
SS-74	Duplicate of SS-73 (4110 Polk Avenue)
SS-75	3815 Fagan Street
SS-76	Duplicate of SS-75 (3815 Fagan Street)
SS-77	Wooded lot south of Carl Avenue, North of 38th street.

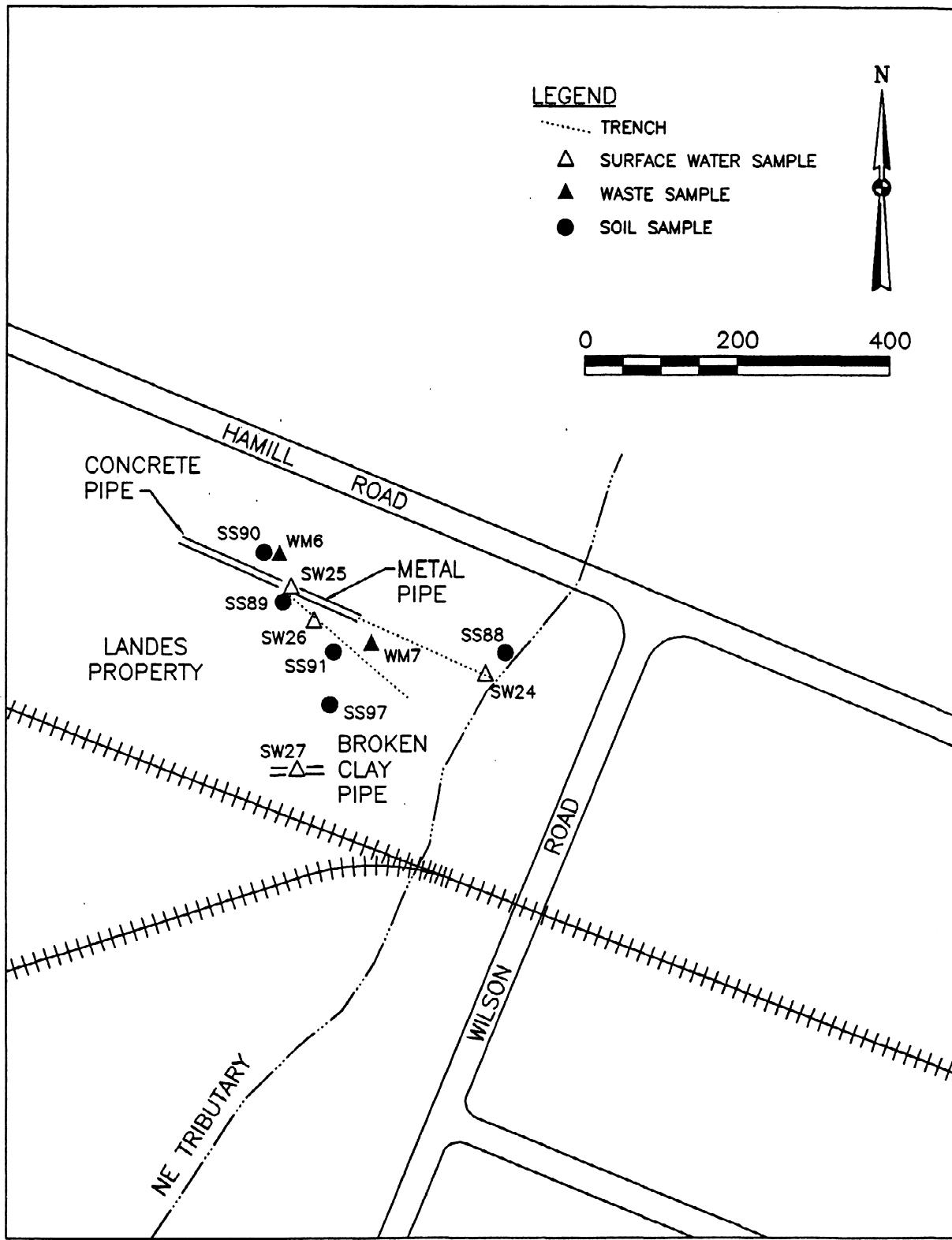
In August, 1996, during construction of a new warehouse on the Landes Property, subsurface contamination was encountered. CDM Federal collected soil and surface water in order to characterize the nature and extent of this contamination. Five soil samples, four surface water samples, and two waste samples were collected and analyzed for VOCs, SVOCs, and metals, cyanide, and pesticides. **Figure 5-9** shows the general locations of the samples collected at the Landes Property.

In December, 1996, at the request of EPA, additional samples were collected along the banks of the Northeast Tributary. These samples were collected from areas of visible staining or coal tar deposits and were analyzed for VOCs, SVOCs, and metals, cyanide, and pesticides, and dioxins. **Figure 5-10** shows the general locations for the samples collected along the Northeast Tributary.

5.2 METHODS

Detailed descriptions of the procedures used to collect the surface and subsurface soil samples and decontaminate sampling equipment can be found in the *Final Work Plan* (CDM, 1995). Generally, subsurface soil samples were collected with split spoon samplers from borings drilled using hollow stem augers, and surface soil samples were collected using pyrex or stainless steel bowls and spoons. Subsurface soil samples were analyzed for TCL and TAL constituents by a CLP laboratory. Surface soil samples were analyzed for TCL semivolatile organic compounds, PCBs, pesticides, and TAL constituents. Ten percent of the surface soil samples were also analyzed for TCL volatile organic compounds (VOCs) and three surface soil samples from the coke plant area were analyzed for dioxins/furans.

Twenty-two surface soil samples were collected from the soil immediately adjacent to the waste material at the ST Site. These samples were analyzed onsite for the presence of PAHs using an immunoassay test kit. The test kit is designed to indicate a "greater than" or "less than" result for two pre-determined concentrations. The concentrations selected for use at the ST Site area were 10 ppm and 50 ppm (total PAH).

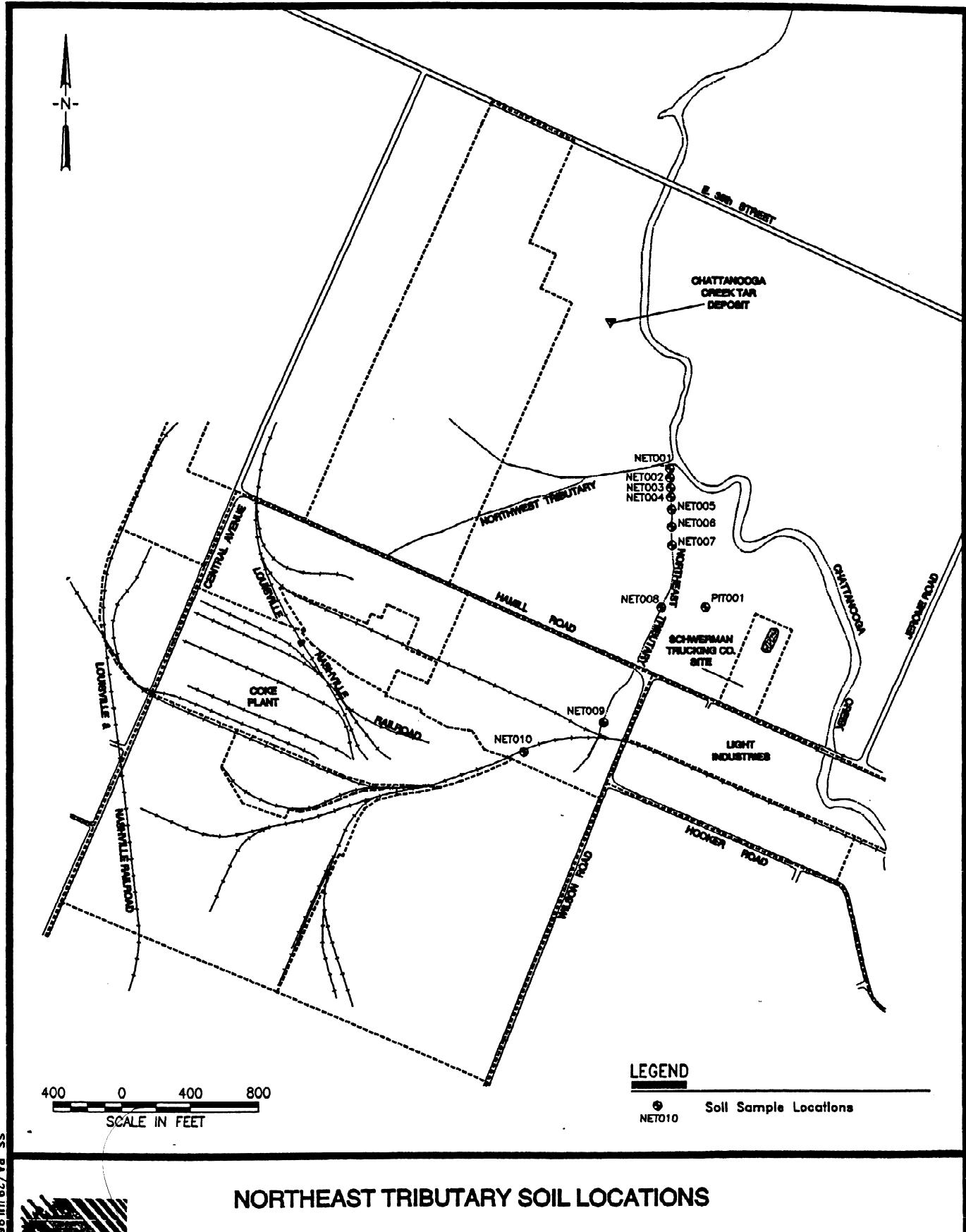


APPROXIMATE LOCATION OF SAMPLES
COLLECTED AT LANDES PROPERTY
AUGUST 1996

CDM FEDERAL PROGRAMS CORPORATION
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TENNESSEE PRODUCTS SITE
CHATANOOGA TENNESSEE

FIGURE NO. 5-9



NORTHEAST TRIBUTARY SOIL LOCATIONS

Tennessee Products Site
Chattanooga, Tennessee

CDM FEDERAL PROGRAMS CORPORATION
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FIGURE No. 5-10

5.3

SUMMARY

5.3.1 BACKGROUND

The analytical results of the background surface soil and subsurface soil samples are listed in **Tables 5-3, 5-4, and 5-5**. These data were used to determine comparison criteria for soil samples collected at both the source and residential areas. Criteria for surface soil and subsurface soil were determined separately. It is assumed that any detection of an organic constituent in subsurface soil is not natural and represents contamination. Therefore, background subsurface soils were analyzed for TAL constituents only. Surface soil was analyzed for TCL SVOCs and pesticides/PCBs, and TAL constituents. The analysis of samples for organic constituents (SVOCs and pesticides/PCBs) in background surface soil was conducted because it is not unusual for some of these constituents to be present in surface soil in industrial areas such as that where the site is located. SVOCs may be deposited in surface soil from industrial emissions.

Each data set (each analyte for surface soil and subsurface soil) was evaluated by the statistical methods suggested in EPA guidance documents and publications (EPA, 1989; EPA, 1992; and EPA, 1995). The data sets were placed into one of three categories: no detections, $\leq 50\%$ detections, and $>50\%$ detections. Analytes in the first category have background concentrations that are below the detection limits. The comparison criteria for these analytes was set at the detection limit (i.e., if the analyte was detected in a sample from the site it is considered to be due to contamination). Data sets with 50% detections or less cannot be reliably modeled by parametric (i.e., normal or gaussian) statistics. Furthermore, the number of samples in these data sets limits the choice of nonparametric methods to non-parametric tolerance intervals. This method defines the 95% tolerance limit as the highest observed concentration (EPA, 1992).

TABLE 5-3
SURFACE SOIL SAMPLING SUMMARY - ORGANICS
BACKGROUND AREAS
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-23	SS-24	SS-25	SS-26	SS-27	SS-28
<u>SEMIVOLATILE ORGANICS</u>							
PHENANTHRENE		210J	440U	430U	400U	410U	150J
FLUORANTHENE		780	83J	430U	400U	88J	320J
PYRENE		730	79J	430U	400U	81J	270J
BENZO(A)ANTHRACENE		390J	440U	430U	400U	43J	160J
CHRYSENE		410J	48J	430U	400U	47J	170J
BENZO(B &/OR K)FLUORANTHENE		950	100J	430U	400U	90J	250J
BENZO-A-PYRENE		490	440U	430U	400U	410U	130J
INDENO (1,2,3-CD) PYRENE		140J	440U	430U	400U	410U	420U
BENZO(GHI)PERYLENE		120J	440U	430U	400U	410U	420U
<u>PESTICIDE/PCBs</u>							
ALPHA-BHC		0.70JN	5.0	0.71J	1.9JN	2.1U	2.2U
4,4-DDT (P,P-DDT)		4.7	4.5U	4.4U	0.74J	4.1U	4.2U
4,4-DDE (P,P-DDE)		2.3J	2.3J	4.4U	4.1U	4.1U	4.2U
ENDRIN ALDEHYDE		4.6U	4.5U	0.94JN	4.1U	4.1U	4.2U
ENDRIN KETONE		4.6U	4.5U	4.4U	4.1U	4.1U	4.2U

Data Qualifiers:

U=The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J=The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate.

The value preceding the "J" is the estimated value.

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N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in ug/kg.

TABLE 5-3 (cont.)
SURFACE SOIL SAMPLING SUMMARY - ORGANICS
BACKGROUND AREAS
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-29	SS-30	SS-31	SS-32	SS-33	SS-34	SS-34 (dup.)
<u>SEMIVOLATILE ORGANICS</u>								
PHENANTHRENE		100J	200J	430U	400U	470U	55J	82J
FLUORANTHENE		240J	490	430U	400U	470U	140J	180J
PYRENE		240J	420J	430U	400U	470U	130J	160J
BENZO(A)ANTHRACENE		110J	240J	430U	400U	470U	420U	420U
CHRYSENE		140J	260J	430U	400U	470U	72J	92J
BENZO(B &/OR K)FLUORANTHENE		190J	430J	430U	400U	470U	100J	150J
BENZO-A-PYRENE		100J	230J	430U	400U	470U	420U	420U
INDENO (1,2,3-CD) PYRENE		54J	470U	430U	400U	470U	420U	420U
BENZO(GHI)PERYLENE		420U	470U	430U	400U	470U	420U	420U
<u>PESTICIDE/PCBs</u>								
ALPHA-BHC		2.2U	2.4U	2.2U	0.25J	2.4U	2.2U	11U
4,4-DDT (P,P-DDT)		4.2U	4.7U	4.3U	4.0U	4.7U	4.2U	21U
4,4-DDE (P,P-DDE)		4.2U	4.7U	4.3U	4.0U	4.7U	4.2U	21U
ENDRIN ALDEHYDE		4.2U	4.7U	4.3U	4.0U	4.7U	4.2U	21U
ENDRIN KETONE		4.2U	4.7U	4.3U	4.0U	4.7U	0.54J	21U

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Concentrations presented in ug/kg.

TABLE 5-4
SURFACE SOIL SAMPLING SUMMARY - INORGANICS
BACKGROUND AREAS
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-23	SS-24	SS-25	SS-26	SS-27	SS-28
<i>INORGANICS</i>							
ARSENIC		8.4J	7.4J	9.7J	5.2J	5.8J	7.1J
BARIUM		93	130	98	85	88	82
BERYLLIUM		1U	1.4	1.3	0.97J	0.91J	1J
COBALT		14	18	24	13	13	21
CHROMIUM		16J	21J	30J	14J	18J	29J
COPPER		12	15	12	12	16	14
NICKEL		9.4J	15	11	10	11	6.8J
LEAD		49	300	38	28	35	48
SELENIUM		1.3J	1UJ	1.9J	1UJ	1UJ	1.5J
THALLIUM		0.55U	0.60U	0.56U	0.52U	0.52	0.56U
VANADIUM		23	27	35	25	26	33
ZINC		68J	69J	63J	45J	61J	46J
MERCURY		0.2U	0.2U	0.1U	0.06U	0.1U	0.1U
ALUMINUM		11000	17000	13000	13000	13000	12000
MANGANESE		1100	1400	2700	1000	1200	2200
CALCIUM		2900J	5400J	1900J	2600J	1900J	2100J
IRON		21000	43000	32000	20000	26000	29000
MAGNESIUM		700	1200	570	1200	900	650
POTASSIUM		1000	1100	650	770	790	1000

Data Qualifiers:

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Concentrations presented in mg/kg.

TABLE 5-4 (cont.)

SURFACE SOIL SAMPLING SUMMARY - INORGANICS
BACKGROUND AREAS
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-29	SS-30	SS-31	SS-32	SS-33	SS-34	SS-34 (dup.)
<u>INORGANICS</u>								
ARSENIC		8.4J	6.5J	2.8J	6.2J	0.62U	5.1J	6.2J
BARIUM		70	200	230	64	30	62	64
BERYLLIUM		0.81J	1.8	1.6	0.71J	1.4	1U	0.48J
COBALT		15	20U	15	13	21	9U	13
CHROMIUM		23J	18J	20J	22J	2.7J	21J	20J
COPPER		7.4	15	21	16	21	11	10
NICKEL		6.6J	14	21	7.9J	13	8.1J	7.3J
LEAD		29	27	24	20	7.1	19	22
SELENIUM		1.5J	1.7J	2UJ	1U	2U	1.6J	1.6J
THALLIUM		0.53U	1U	0.57U	0.51U	0.59U	0.50U	1U
VANADIUM		30	26	22	35	10U	29	31
ZINC		38J	62J	68J	41	45	36J	36J
MERCURY		0.1U	0.1U	0.06U	0.1U	0.07U	0.14	0.14
ALUMINUM		11000	16000	19000	18000J	8300J	12000	13000
MANGANESE		850	800	2000	670J	1000J	960	1500
CALCIUM		1200J	23000J	8200J	620U	30U	2600J	2700J
IRON		26000	31000	33000	26000J	26000J	30000	27000
MAGNESIUM		460	2100	3600	730	450	800	770
POTASSIUM		620	950	1900	650	1700	640	570

Data Qualifiers:

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N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in mg/kg.

TABLE 5-5
SUBSURFACE SOIL SAMPLING SUMMARY - INORGANICS
BACKGROUND AREAS
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SB-13-05	SB-13-15	SB-13-25	SB-14-05	SB-14-15	SB-15-05
<u>INORGANICS</u>							
SILVER		0.80U	0.90U	1U	0.74U	2U	0.85U
ARSENIC		7.8J	8.5J	8.4J	5.6J	25J	6.1J
BARIUM		48	95	95	82	110	99
BERYLLIUM		0.69J	2.6	2	0.89J	2.2	1.1J
COBALT		10U	27	22	4U	20U	26
CHROMIUM		22	11	16J	18J	19J	22J
COPPER		12	20	30	12	29	12
NICKEL		9J	40	58	5.2J	31	12
LEAD		25JN	18JN	20	8.1	55	18
SELENIUM		0.51UJ	0.57UJ	1.8JN	2UJ	2UJ	1.8JN
VANADIUM		32	26	26	16	27	30
ZINC		40	140	180J	30UJ	110J	43J
MERCURY		0.1U	0.2U	0.07U	0.18	0.07U	0.06U
ALUMINUM		15000	17000	24000	11000	18000	20000
MANGANESE		320	1500	1800	240	1200	670
CALCIUM		140UJ	770UJ	5700J	1800J	4800J	1400J
IRON		40000	62000	59000	22000	63000	45000
MAGNESIUM		450	590	1500	940	4500	630
POTASSIUM		950	1500	1800	580	1700	820

Data Qualifiers:

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The value preceding the "J" is the estimated value.

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Concentrations presented in mg/kg.

TABLE 5-5 (cont.)

**SUBSURFACE SOIL SAMPLING SUMMARY - INORGANICS
BACKGROUND AREAS
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL	Sample ID:	SB-15-15	SB-16-05	SB-16-15	SB-16-20	SB-16-20 (dup.)
<u>INORGANICS</u>						
SILVER		1J	0.84J	0.81U	0.85U	0.89U
ARSENIC		6.9J	6.3J	4.5J	3UJ	6.5J
BARIUM		130	47	29	91	99
BERYLLIUM		2.2	0.52J	0.75J	4.3	9.8
COBALT		20U	7U	5U	150	31
CHROMIUM		22J	21J	31J	13J	17J
COPPER		21	15	22	29	25
NICKEL		34	6.8J	19	71	54
LEAD		16	16	11	26	15
SELENIUM		1UJ	1UJ	2UJ	1UJ	1UJ
VANADIUM		31	43	28	24	23
ZINC		100J	31J	54J	130J	140J
MERCURY		0.2U	0.13	0.06U	0.1U	0.07U
ALUMINUM		28000	17000	12000	24000	16000
MANGANESE		1500	370	78	2500	940
CALCIUM		8600J	1900J	1200J	2300J	2800J
IRON		63000	34000	45000	43000	42000
MAGNESIUM		2600	430	930	1200	1600
POTASSIUM		1700	810	1600	1900	2200

Data Qualifiers:

U=The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J=The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate.

The value preceding the "J" is the estimated value.

UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in mg/kg.

To determine if the remaining data sets are lognormally distributed, they were evaluated by the Shapiro-Wilk test for normality at the 95% confidence level. For the purposes of the statistical modeling, nondetections were taken as being equal to $\frac{1}{2}$ the detection limit. Four data sets were found to be nonparametric by this test. Outlier testing of these data sets found three to contain a single extreme low data point. Omission of these outliers resulted in each of the three data sets becoming lognormally distributed. The fourth data set (surface soil iron) could not be modeled by parametric statistics. The background criteria for the normally distributed data sets was established as the upper 95%, parametric tolerance limit (EPA, 1989). The background criteria for surface soil iron was established as the upper 95%, nonparametric tolerance limit described above. The background comparison criteria for surface and subsurface soil are shown in **Table 5-6**. The comparison criteria for any organic constituent not listed in Table 5-6 is the detection limit.

5.3.2 COKE PLANT

The soil analytical data collected during the RI for the coke plant are evaluated in this section with the soil analytical data for 83 samples reported in Mead Corporation's (Mead) *Post Removal Baseline Assessment Report* (Mead, 1995). Analytical data from the Mead surface soil and subsurface soil samples are summarized in **Tables 5-7, 5-8, and 5-9**. The RI soil analytical data are summarized in **Tables 5-10 through 5-16**. Surface soil samples collected during the RI were collected from a depth of 0 to 6 inches. The depth at which subsurface soil samples were collected during the RI is indicated by the last element in the sample identification number. The sample was collected from a depth interval starting at the same depth as the code and extending 1.5 feet below (e.g., SB-01-05 was collected from a depth of 5 to 6.5 feet at location SB-01). These depths ranged from 5 to 21 feet. The depth of a Mead soil sample is indicated by a letter

TABLE 5-6
BACKGROUND SOIL COMPARISON CRITERIA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

Constituent	Surface Soil Criteria (mg/kg)	Subsurface Soil Criteria (mg/kg)
Silver	2	1
Arsenic	16	31
Barium	393	302
Beryllium	3.56	15
Cadmium	0.92	0.91
Cobalt	42	91
Chromium	38	43
Copper	31	55
Nickel	27	276
Lead	347	79
Antimony	4	5
Selenium	1.9	1.8
Thallium	0.52	3
Vanadium	44	57
Zinc	102	679
Mercury	0.14	0.18
Aluminium	25524	40433
Manganese	3957	14011
Calcium	260173	94667
Iron	43000	120411
Magnesium	4883	9720
Sodium	80	110
Potassium	2563	4419
Cyanide	0.08	0.1
Phenanthrene	0.21	-
Fluoranthene	1.233	-
Pyrene	1.131	-
Benzo(a)anthracene	0.39	-
Chrysene	0.977	-
Benzo(b&/or k) Fluoranthene	1.206	-
Benzo (a) pyrene	0.49	-
Iproto(1,2,3-cd)pyrene	0.14	-
Benzo(ghi)perylene	0.12	-
alpha-BHC	0.005	-
4,4-DDT	0.0047	-
4,4-DDE	0.0023	-
Endrine aldehyde	0.0094	-
Endrine ketone	0.0054	-

- = not analyzed. All organic constituents in subsurface soil are assumed to be unnatural contamination.

TABLE 5-7
1995 SOIL SAMPLING SUMMARY - VOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	MSB-01A	MSB-01F	MSB-02A	MSB-02J	MSB-02P	B-02PRE	MSB-03A	MSB-03G	MSB-04A	MSB-04H	N
<u>VOLATILE ORGANICS</u>											
Methylene chloride	28 UJ	15 UJ	15 UJ	30 UJ	23 UJ	75 UJ	53 UJ	17 UJ	15 UJ	17 UJ	
Acetone	13 UJ	13 UJ	12 UJ	17 UJ	26 UJ	180 UJ	29 U	23 UJ	12 UJ	13 UJ	
Chloroform	12 U	13 U	10 J	1.4 J	14 U	48 U	12 U	12 U	12 U	13 U	
Carbon tetrachloride	12 U	13 U	12 U	13 U	14 U	48 U	12 U	12 U	12 U	13 U	
Benzene	12 U	13 U	12 U	21	150	150	12 U	12 U	46	13 U	
Tetrachloroethene	12 U	13 U	10 J	13 U	14 U	48 U	2.2 J	12 U	12 U	13 U	
Toluene	12 U	13 U	4.6 J	200	370 E	350 D	12 U	12 U	120	13 U	
Chlorobenzene	12 U	13 U	12 U	260	490 E	510 D	12 U	12 U	66	13 U	
Ethylbenzene	12 U	13 U	12 U	7.9 J	13 J	48 U	12 U	12 U	41	13 U	
Styrene	12 U	13 U	12 U	13 U	14 U	48 U	12 U	12 U	27	13 U	
Xylenes (Total)	12 U	13 U	12 U	57	140	50	12 U	12 U	610	13 U	

Data qualifiers:

U = the chemical was analyzed for, but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

D = Indicates chemical was identified in an analysis at a secondary dilution factor.

All concentrations reported in ug/Kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-7 (cont.)

1995 SOIL SAMPLING SUMMARY - VOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	MSB-05A	MSB-05H	MSB-06A	MSB-06C	MSB-07A	MSB-07H	MSB-08A	MSB-08AD	MSB-08I	MSB-09A	N
<u>VOLATILE ORGANICS</u>											
Methylene chloride	17 UJ	36 UJ	41 UJ	13 UJ	61 UJ	28 UJ	72 UJ	52 UJ	15 UJ	29 UJ	
Acetone	13 UJ	27 U	78 U	26 J	52 U	64 U	35 U	35 U	30 J	12 UJ	
Chloroform	12 U	12 U	12 U	13 U	12 U	13 U	13 U	12 U	13 U	12 U	
Carbon tetrachloride	12 U	12 U	12 U	13 U	12 U	13 U	13 U	12 U	13 U	12 U	
Benzene	12 U	12 U	10 J	19	12 U	13 U	13 U	12 U	13 U	12 U	
Tetrachloroethene	2.9 J	3.2 J	1.7 J	13 U	12 U	13 U	13 U	12 U	13 U	12 U	
Toluene	6.8 J	12 U	5.6 J	13 U	12 U	13 U	13 U	1.7 J	13 U	3 J	
Chlorobenzene	3.4 J	12 U	12 U	13 U	12 U	13 U	13 U	12 U	13 U	2 J	
Ethylbenzene	12 U	12 U	6.5 J	13 U	1.2 J	13 U	13 U	12 U	13 U	12 U	
Styrene	12 U	12 U	2.8 J	13 U	12 U	13 U	13 U	12 U	13 U	12 U	
Xylenes (Total)	12 U	12 U	53	5.4 J	12 U	13 U	13 U	8.5 J	13 U	12 U	

Data qualifiers:

U = the chemical was analyzed for, but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

D = Indicates chemical was identified in an analysis at a secondary dilution factor.

All concentrations reported in ug/Kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-7 (cont.)

1995 SOIL SAMPLING SUMMARY - VOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	MSB-09B	MSB-10A	MSB-10ARE	MSB-10C	MSB-11A	MSB-11G	MSB-12A	MSB-12AD	MSB-12E	MSB-12ED	N
<u>VOLATILE ORGANICS</u>											
Methylene chloride	54 UJ	46 UJ	64 UJ	43 UJ	42 UJ	1500 U	33 UJ	36 UJ	33 UJ	30 UJ	
Acetone	29 UJ	11 UJ	11 UJ	29 UJ	23 U	1500 U	22 UJ	12 UJ	13 UJ	19 UJ	
Chloroform	13 U	11 U	11 U	12 U	13 U	1500 U	12 U	12 U	13 U	13 U	
Carbon tetrachloride	13 U	11 U	11 U	12 U	13 U	1500 U	12 U	12 U	13 U	13 U	
Benzene	20	11 U	11 U	12 U	31	5500 J	12 U	12 U	13 U	13 U	
Tetrachloroethene	13 U	11 UJ	11 U	12 U	13 U	1500 U	12 U	12 U	13 U	13 U	
Toluene	13 U	1 J	2 J	12 U	44	2100	12 U	1 J	2 J	13 U	
Chlorobenzene	13 U	11 UJ	11 U	12 U	13 U	1500 U	12 U	12 U	13 U	13 U	
Ethylbenzene	13 U	11 UJ	11 U	12 U	2.6 J	770 J	12 U	12 U	13 U	13 U	
Styrene	13 U	11 UJ	11 U	12 U	16	330 J	12 U	12 U	13 U	13 U	
Xylenes (Total)	2 J	11 UJ	11 U	12 U	48	5700	12 U	12 U	3 J	13 U	

Data qualifiers:

U = the chemical was analyzed for, but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

D = Indicates chemical was identified in an analysis at a secondary dilution factor.

All concentrations reported in ug/Kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-7 (cont.)

1995 SOIL SAMPLING SUMMARY - VOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	MSB-13A	MSB-13B	MSB-13H	MSB-13HD	MSB-14A	MSB-14D	MSB-15A	MSB-15C	MSB-16A	MSB-16C	N
<u>VOLATILE ORGANICS</u>											
Methylene chloride	17 UJ	1600 U	34 UJ	20 UJ	13 UJ	17 UJ	26 UJ	36 UJ	24 UJ	35 UJ	
Acetone	12 UJ	1600 U	15 UJ	13 UJ	13 UJ	20 UJ	13 UJ	28 UJ	12 UJ	22 UJ	
Chloroform	12 U	1600 U	14 U	13 U	13 U	12 U	13 U	13 U	12 U	12 U	
Carbon tetrachloride	12 U	1600 U	14 U	13 U	13 U	12 U	13 U	13 U	12 U	12 U	
Benzene	12 U	560 J	14 U	13 U	4 J	33	13 U	13 U	12 U	12 U	
Tetrachloroethene	12 U	1600 U	14 U	13 U	13 U	12 U	13 U	13 U	12 U	12 U	
Toluene	12 U	360 J	14 U	13 U	2 J	150	13 U	13 U	12 U	12 U	
Chlorobenzene	12 U	1600 U	14 U	13 U	13 U	12 U	13 U	13 U	12 U	12 U	
Ethylbenzene	12 U	1600 U	14 U	13 U	13 U	15	13 U	13 U	12 U	12 U	
Styrene	12 U	1600 U	14 U	13 U	13 U	12 U	13 U	13 U	12 U	12 U	
Xylenes (Total)	12 U	1600	2 J	13 U	9 J	650	13 U	13 U	12 U	12 U	

Data qualifiers:

U = the chemical was analyzed for, but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

D = Indicates chemical was identified in an analysis at a secondary dilution factor.

All concentrations reported in ug/Kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-7 (cont.)

1995 SOIL SAMPLING SUMMARY - VOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	MSB-17A	MSB-17B	MSB-18A	MSB-18B	MSB-19A	MSB-19E	MSB-20A	MSB-20AD	MSB-20D	MSB-21A	N
<u>VOLATILE ORGANICS</u>											
Methylene chloride	21 UJ	27 UJ	27 U	26 UJ	35 UJ	21 U	38 U	39 U	36 U	29 U	
Acetone	13 UJ	14 UJ	27 UJ	23 UJ	12 UJ	38 UJ	12 UJ	26 UJ	54 UJ	19 UJ	
Chloroform	13 U	13 U	12 U	13 U	12 U	14 U	12 U	12 U	13 U	13 U	
Carbon tetrachloride	13 U	13 U	12 U	13 U	12 U	14 U	12 U	12 U	13 U	13 U	
Benzene	13 U	13 U	12 U	13 U	12 U	2 J	12 U	12 U	13 U	13 U	
Tetrachloroethene	13 U	13 U	12 U	13 U	12 U	14 U	12 U	12 U	13 U	13 U	
Toluene	13 U	13 U	12 U	13 U	12 U	14 U	12 U	12 U	13 U	13 U	
Chlorobenzene	13 U	13 U	12 U	13 U	12 U	14 U	12 U	12 U	13 U	13 U	
Ethylbenzene	13 U	13 U	12 U	13 U	12 U	18	12 U	12 U	13 U	13 U	
Styrene	13 U	13 U	12 U	13 U	12 U	14 U	12 U	12 U	13 U	13 U	
Xylenes (Total)	13 U	13 U	12 U	13 U	12 U	8 J	12 U	12 U	13 U	13 U	

Data qualifiers:

U = the chemical was analyzed for, but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

D = Indicates chemical was identified in an analysis at a secondary dilution factor.

All concentrations reported in ug/Kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-7 (cont.)

1995 SOIL SAMPLING SUMMARY - VOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	MSB-21B	MSB-22A	MSB-22ARE	MSB-22E	MSB-22ED	MSB-23A	MSB-23D	MSB-24A	MSB-24ARE	MSB-24D	N
<u>VOLATILE ORGANICS</u>											
Methylene chloride	49 U	63 R	48 UJ	58 U	49 U	220 UJ	49 UJ	60 R	46 U	41 UJ	
Acetone	70 UJ	9 R	19 J	19 UJ	39 UJ	12 UJ	30 U	25 R	35 UJ	12 UJ	
Chloroform	13 U	12 R	12 U	13 U	13 U	12 U	12 U	12 R	12 U	12 U	
Carbon tetrachloride	13 U	12 R	12 U	13 U	13 U	12 U	12 U	12 R	12 U	12 U	
Benzene	13 U	12 R	12 U	13 U	13 U	12 U	12 U	12 R	12 U	12 U	
Tetrachloroethene	13 U	12 R	12 U	13 U	13 U	12 U	12 U	12 R	12 UJ	12 U	
Toluene	13 U	12 R	12 U	13 U	13 U	12 U	12 U	3 R	3 J	12 U	
Chlorobenzene	13 U	12 R	12 U	13 U	13 U	12 U	12 U	12 R	12 UJ	12 U	
Ethylbenzene	13 U	12 R	12 U	13 U	13 U	12 U	12 U	12 R	12 UJ	12 U	
Styrene	13 U	12 R	12 U	13 U	13 U	12 U	12 U	12 R	12 UJ	12 U	
Xylenes (Total)	13 U	12 R	12 U	13 U	13 U	12 U	12 U	12 R	12 UJ	12 U	

Data qualifiers:

U = the chemical was analyzed for, but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

E = Quantitation is approximate because theconcentration reported from the initial analysis exceeded the linear calibration range.

D = Indicates chemical was identified in an analysis at a secondary dilution factor.

All concentrations reported in ug/Kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-7 (cont.)

1995 SOIL SAMPLING SUMMARY - VOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	MSB-25A	MSB-25D	MSB-26A	MSB-26C	MSB-27A	MSB-27AD	MSB-27C	MSB-28A	MSB-28ARE	MSB-28F	M ^a
<u>VOLATILE ORGANICS</u>											
Methylene chloride	130 UJ	20 UJ	22 UJ	40 UJ	57 UJ	37 UJ	36 U	52 UJ	62	51 UJ	
Acetone	11 UJ	13 UJ	29 J	21 J	41 J	24 U	29 UJ	24 J	67	26 J	
Chloroform	11 U	13 U	12 U	15 U	18 U	15 U	13 U	14 U	14 U	17 U	
Carbon tetrachloride	11 U	13 U	12 U	15 U	18 U	15 UJ	13 U	14 U	14 U	17 U	
Benzene	11 U	13 U	12 U	15 U	3 J	15 U	72	14 U	14 U	17 U	
Tetrachloroethene	11 U	13 U	12 U	15 U	18 U	15 U	13 U	14 U	14 U	17 U	
Toluene	11 U	13 U	12 U	15 U	7 J	2 J	2 J	2 J	13 J	13 J	
Chlorobenzene	11 U	13 U	12 U	15 U	18 U	15 U	7 J	14 U	14 U	17 U	
Ethylbenzene	11 U	13 U	12 U	15 U	7 J	4 J	9 J	14 U	14 U	17 U	
Styrene	11 U	13 U	12 U	15 U	18 U	15 U	13 U	14 U	14 U	17 U	
Xylenes (Total)	11 U	13 U	12 U	15 U	9 J	9 J	4 J	14 U	17	17 U	

Data qualifiers:

U = the chemical was analyzed for, but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

D = Indicates chemical was identified in an analysis at a secondary dilution factor.

All concentrations reported in ug/Kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-7 (cont.)

1995 SOIL SAMPLING SUMMARY - VOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SB-28FD	MSB-28I	MSB-29B	MSB-29H	MSB-30A	MSB-30F	MSB-31A	MSB-31F	MSB-32A	MSB-33A	N
<u>VOLATILE ORGANICS</u>											
Methylene chloride	43 UJ	110 UJ	25 U	49 UJ	59 U	34 U	73 U	25 U	42 U	87 U	
Acetone	22 J	99 J	32 UJ	70	16 UJ	38 UJ	23 UJ	52 UJ	20 UJ	34 UJ	
Chloroform	17 U	58 U	11 U	13 U	11 U	13 U	11 U	12 U	11 U	14 U	
Carbon tetrachloride	17 U	58 U	11 U	13 U	11 U	13 U	11 U	12 U	11 U	14 U	
Benzene	17 U	58 U	38	13 U	11 U	13 U	11 U	12 U	11 U	14 U	
Tetrachloroethene	17 U	200	11 U	13 U	11 U	13 U	11 U	12 U	11 U	14 U	
Toluene	15 J	600	20	13 U	11 U	13 U	3 J	4 J	11 U	14 U	
Chlorobenzene	17 U	7 J	11 U	13 U	11 U	13 U	11 U	12 U	11 U	14 U	
Ethylbenzene	17 U	58 U	4 J	13 U	11 U	13 U	11 U	12 U	11 U	14 U	
Styrene	17 U	58 U	11 U	13 U	11 U	13 U	11 U	12 U	11 U	14 U	
Xylenes (Total)	17 U	58 U	79	13 U	11 U	13 U	11 U	12 U	11 U	14 U	

Data qualifiers:

U = the chemical was analyzed for, but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

D = Indicates chemical was identified in an analysis at a secondary dilution factor.

All concentrations reported in ug/Kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-7 (cont.)

1995 SOIL SAMPLING SUMMARY - VOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	MSB-33E	MSB-34A	MSB-34F	MSB-35A	MSB-35B	MSB-36A	MSB-36ARE	MSB-36C	MSB-37A	MSB-37C	N
<u>VOLATILE ORGANICS</u>											
Methylene chloride	25 U	35 UJ	18 U	56 U	17 U	18 UJ	49	130 U	94 U	55 UJ	
Acetone	28 UJ	17	19 UJ	19 UJ	22 UJ	14 U	12 J	88 UJ	40 UJ	12 J	
Chloroform	13 U	13 U	13 U	13 U	12 U	14 U	2 J	14 U	16 U	17 U	
Carbon tetrachloride	13 U	13 U	13 U	13 U	12 U	14 UJ	2 J	14 U	16 U	17 U	
Benzene	13 U	13 U	13 U	13 U	12 U	2 J	3 J	14 U	16 U	17 U	
Tetrachloroethene	13 U	13 U	13 U	13 U	12 U	14 UJ	14 U	14 U	16 U	17 U	
Toluene	13 U	13 U	13 U	13 U	12 U	14 UJ	3 J	14 U	16 U	17 U	
Chlorobenzene	13 U	13 U	13 U	13 U	12 U	3 J	4 J	4 J	16 U	17 U	
Ethylbenzene	13 U	13 U	13 U	13 U	12 U	14 UJ	14 U	14 U	16 U	17 U	
Styrene	13 U	13 U	13 U	13 U	12 U	14 UJ	14 U	14 U	16 U	17 U	
Xylenes (Total)	13 U	13 U	13 U	13 U	12 U	14 UJ	14 U	14 U	16 U	17 U	

Data qualifiers:

U = the chemical was analyzed for, but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

D = Indicates chemical was identified in an analysis at a secondary dilution factor.

All concentrations reported in ug/Kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-7 (cont.)

1995 SOIL SAMPLING SUMMARY - VOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	MSB-38A	MSB-38C	MSB-38CD	MSB-39A	MSB-40A	MSB-40B	MSB-41A	MSB-41C
<u>VOLATILE ORGANICS</u>								
Methylene chloride	83 UJ	80 UJ	28 UJ	52 UJ	73 UJ	39 UJ	1500 U	78 UJ
Acetone	25 J	14 J	21 J	16 UJ	18 J	10 J	1500 UJ	120 J
Chloroform	16 U	15 U	16 U	16 U	18 U	12 U	1500 U	67 U
Carbon tetrachloride	16 U	15 U	16 U	16 U	18 U	12 U	1500 U	67 U
Benzene	18	6 J	13 J	16 U	11 J	12 U	8700 J	9 J
Tetrachloroethene	16 U	15 U	16 U	16 U	9 J	12 U	1500 U	64 J
Toluene	16 U	15 U	2 J	16 U	43	1 J	850 J	190
Chlorobenzene	16 U	15 U	16 U	16 U	18 U	12 U	1500 U	67 U
Ethylbenzene	16 U	15 U	16 U	16 U	18 U	1 J	660 J	7 J
Styrene	16 U	15 U	16 U	16 U	18 U	12 U	1500 U	67 U
Xylenes (Total)	16 U	15 U	3 J	16 U	18 U	12 U	5100	38 J

Data qualifiers:

U = the chemical was analyzed for, but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

D = Indicates chemical was identified in an analysis at a secondary dilution factor.

All concentrations reported in ug/Kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-8
1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

	Sample ID: MSB-01A	MSB-01F	MSB-02A	MSB-02ADL	MSB-02J	MSB-02P	MSB-02PDL	MSB-03A	MSB-03G	MSB-04A
CHEMICAL										
<u>SEMOVOLATILE ORGANICS</u>										
Phenol	400 U	420 U	1900 U	19000 U	1700 U	59 J	4700 U	48 J	410 U	820 J
2-Chlorophenol	400 U	420 U	1900 U	19000 U	1700 U	470 U	4700 U	390 U	410 U	3900 U
1,3-Dichlorobenzene	400 U	420 U	1900 U	19000 U	1700 U	94 J	4700 U	390 U	410 U	3900 U
1,4-Dichlorobenzene	400 U	420 U	1900 U	19000 U	1700 U	950	830 DJ	390 U	410 U	3900 U
1,2-Dichlorobenzene	400 U	420 U	1900 U	19000 U	1700 U	770	640 DJ	390 U	410 U	3900 U
2-Methylphenol	400 U	420 U	1900 U	19000 U	1700 U	180 J	470 U	4700 U	53 J	410 U
4-Methylphenol	400 U	420 U	1900 U	19000 U	1700 U	470 U	4700 U	49 J	410 U	600 J
N-Nitroso-di-n-propylamine	400 U	420 U	1900 U	19000 U	1700 U	470 U	4700 U	390 U	410 U	3900 U
2,4-Dimethylphenol	400 U	420 U	1900 U	19000 U	1700 U	470 U	4700 U	390 U	410 U	3900 U
2,4-Dichlorophenol	400 U	420 U	1900 U	19000 U	1700 U	470 U	4700 U	390 U	410 U	3900 U
1,2,4-Trichlorobenzene	400 U	420 U	420 J	19000 U	1700 U	1100	1100 DJ	390 U	410 U	3900 U
Naphthalene	400 U	420 U	4400	3600 DJ	9100	20000 E	29000 D	970	130 J	120000 E
4-Chloroaniline	400 U	420 U	1900 U	19000 U	1700 U	470 U	4700 U	390 U	410 U	3900 U
2-Methylnaphthalene	400 U	420 U	3900	3200 DJ	3100	12000 E	11000 D	1000	44 J	230000 E
Acenaphthylene	400 U	420 U	4100	19000 U	180 J	370 J	4700 U	140 J	410 U	21000
Acenaphthene	400 U	420 U	2500	2300 DJ	1100 J	930	790 DJ	54 J	410 U	6400
2,4-Dinitrophenol	960 U	1000 U	4700 U	47000 U	4200 U	1100 U	11000 U	950 U	990 U	9400 U
Dibenzofuran	400 U	420 U	2700	2300 DJ	1400 J	1700	1300 DJ	320 J	410 U	25000
Fluorene	400 U	420 U	3000	2100 DJ	1800	2800	2100 DJ	67 J	51 J	18000
4-Bromophenyl-phenylether	400 U	420 U	1900 U	19000 U	1700 U	470 U	4700 U	390 U	410 U	3900 U
Phenanthrene	400 U	420 U	65000 E	43000 D	6700	12000 E	9900 D	1100	200 J	3200 J
Anthracene	400 U	420 U	6800	4800 DJ	970 J	1600	1300 DJ	160 J	50 J	12000
Carbazole	400 U	420 U	4700	3500 DJ	330 J	130 J	4700 U	390 U	410 U	4200
Di-n-butyl phthalate	48 J	420 U	1900 U	19000 U	1700 U	470 U	4700 U	390 U	410 U	3900 U
Fluoranthene	400 U	420 U	110000 E	78000 D	3600	6400 E	3900 DJ	1200	150 J	4000
Pyrene	400 U	420 U	92000 E	84000 D	3400	7200 E	5200 D	890	120 J	2600 J
Butyl Benzyl phthalate	400 U	420 U	1900 U	19000 U	1700 U	470 U	4700 U	390 U	410 U	3900 U
3,3'-Dichlorobenzidine	400 U	420 U	1900 U	19000 U	1700 UU	470 U	4700 U	390 U	410 U	3900 U
Benzo(a)anthracene	400 U	420 U	34000 E	35000 D	1200 J	1600	1700 DJ	560	71 J	2400 J
Chrysene	400 U	420 U	39000 E	37000 D	960 J	1600	1600 DJ	880	65 J	25000
bis(2-Ethylhexyl)phthalate	400 U	420 U	1900 U	19000 U	1700 U	470 U	4700 U	85 J	410 U	3900 U
Di-n-octyl phthalate	400 U	420 U	1900 UU	19000 UU	1700 U	470 U	4700 U	390 U	410 U	3900 U
Benzo(b)fluoranthene	400 U	420 U	130000 XE	63000 DXJ	1500 J	1900 X	1500 DXJ	1800	77 JX	37000 XEJ
Benzo(k)fluoranthene	400 U	420 U	130000 XE	68000 DXJ	1500 J	1900 X	1600 DXJ	1800	77 JX	36000 X E
Benzo(a)pyrene	400 U	420 U	44000 E	30000 J	880 J	1100	900 DJ	480	49 J	20000
Indeno(1,2,3-cd)pyrene	400 U	420 U	11000 J	13000 DJ	300 J	500	4700 U	170 J	410 U	15000
Dibenzo(a,h)anthracene	400 U	420 U	3200 J	3200 DJ	1700 U	140 J	4700 U	60 J	410 U	6500
Benzo(g,h,i)perylene	400 U	420 U	9000 J	12000 DJ	260 J	340 J	4700 U	160 J	410 U	15000

Data Qualifiers

U = The chemical was analyzed for , but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

D = Indicates chemical was identified in an analysis at a secondary dilution factor.

X = The laboratory was unable to adequately resolve benzo(a)fluoranthene and benzo(k)fluoranthene.

E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

K = The chemical was detected in a blank at a similar concentration level.

Concentrations presented in ug/L. Concentrations printed in bold italicized text are considered to reflect a validation of unnatural contamination.

TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID: MSB-04ADL	MSB-04H	MSB-05A	MSB-05H	MSB-06A	MSB-06ADL	MSB-06C	MSB-07A	MSB-07H	MSB-07HDL
<u>SEMITRIVOLATILE ORGANICS</u>										
Phenol	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	51 J
2-Chlorophenol	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	420 U
1,3-Dichlorobenzene	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	420 U
1,4-Dichlorobenzene	390000	U	440 U	130 J	3200 U	4100 U	160000 U	420 U	12000 U	420 U
1,2-Dichlorobenzene	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	420 U
2-Methylphenol	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	420 U
4-Methylphenol	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	420 U
N-Nitroso-di-n-propylamine	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	420 U
2,4-Dimethylphenol	390000	U	440 U	820 U	3200 U	700 J	160000 U	420 U	12000 U	420 U
2,4-Dichlorophenol	390000	U	440 U	1000	3200 U	4100 U	160000 U	420 U	12000 U	420 U
1,2,4-Trichlorobenzene	390000	U	440 U	110 J	3200 U	4100 U	160000 U	420 U	12000 U	420 U
Naphthalene	2600000 D	160 J	4300	1800 J	320000 E	940000 D	3200	4500 J	630	530 DJ
4-Chloroaniline	390000	U	440 U	1400	3200 U	4100 U	160000 U	420 U	12000 U	420 U
2-Methylnaphthalene	96000 DJ	440 U	470 J	720 J	280000 E	310000 D	340 J	3400 J	210 J	410 DJ
Acenaphthylene	390000	U	440 U	110 J	3200 U	36000 E	28000 DJ	350 J	3400 J	330 J
Acenaphthene	390000	U	440 U	89 J	380 J	57000 E	50000 DJ	1200	12000 U	9900 E
2,4-Dinitrophenol	940000	U	1100 U	2000 U	7800 U	10000 U	400000 U	1000 U	28000 U	1000 U
Dibenzofuran	390000	U	440 U	510 J	2000 J	42000 E	45000 DJ	420 U	3700 J	8700 E
Fluorene	390000	U	440 U	590 J	2500 J	46000 E	41000 DJ	860	4500 J	10000 E
4-Bromophenyl-phenylether	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	420 U
Phenanthrene	46000 DJ	440 U	2600	18000	41000 E	47000 D J	290 J	40000	830	660 D J
Anthracene	390000	U	440 U	420 J	2300 J	13000	160000 U	660	6000 J	5400 E
Carbazole	390000	U	440 U	320 J	1100 J	4100 U	160000 U	420 U	3700 J	1100
Di-n-butyl phthalate	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	56 J
Fluoranthene	55000 DJ	440 U	2100	16000	16000	19000 DJ	1400	51000	12000 E	8700 D
Pyrene	54000 DJ	440 U	1700	15000	7500	21000 DJ	2800	42000	9000 E	7900 D
Butyl Benzyl phthalate	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	420 U
3,3'-Dichlorobenzidine	390000	U	440 U	820 U	360 J	4100 U	160000 U	420 U	1400 J	420 U
Benzo(a)anthracene	390000	U	440 U	610 J	4600	7200	160000 U	1200	21000	1900
Chrysene	390000	U	440 U	590 J	4700	9300	160000 U	1300	25000	1700
bis(2-Ethylhexyl)phthalate	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	420 U
Di-n-octyl phthalate	390000	U	440 U	820 U	3200 U	4100 U	160000 U	420 U	12000 U	420 U
Benzo(b)fluoranthene	38000 DXJ	440 U	790 XJ	7300 X	12000 XJ	160000 U	1300 X	41000	2400 X	2000 DXJ
Benzo(k)fluoranthene	42000 DXJ	440 U	790 XJ	7400 X	14000 XJ	160000 U	1300 X	41000	2400 X	2200 DX
Benzo(a)pyrene	390000	U	440 U	540 J	4400	5600	160000 U	560	17000	1200
Indeno(1,2,3-cd)pyrene	390000	U	440 U	320 J	1500 J	2800 J	160000 U	130 J	6400 J	460
Dibenzo(a,h)anthracene	390000	U	440 U	820 U	440 J	880 J	160000 U	420 U	2300 J	120 J
Benzo(g,h,i)perylene	390000	U	440 U	300 J	1100 J	2700 J	160000 U	110 J	4200 J	440
Data Qualifiers										
U = The chemical was analyzed for , but not detected at or above the associated numerical value.										
J = Quantitation is approximate because of limitations identified during the quality assurance review.										
D = Indicates chemical was identified in an analysis at a secondary dilution factor.										
X = The laboratory was unable to adequately resolve benzo(a)fluoranthene and benzo(k)fluoranthene.										
E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.										
K = The chemical was detected in a blank at a similar concentration level.										
Concentrations presented in ug/L. Concentrations printed in bold italicized text are considered to reflect a validation of unnatural contamination.										

U = The chemical was analyzed for , but not detected at or above the associated numerical value.
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Concentrations presented in ug/L. Concentrations printed in bold italicized text are considered to reflect a validation of unnatural contamination.

TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	MSB-08A	MSB-08ADL	MSB-08AD	MSB-08ADDL	MSB-08I	MSB-09A	MSB-09B	MSB-10A	MSB10ADL	MSB-10C	MSB
<u>SEMOVOLATILE ORGANICS</u>												
Phenol		2100 U	21000 U	2000 U	41000 U	420 U	1200 U	410 U	140 J	3700 U	4100 U	
2-Chlorophenol		2100 U	21000 U	2000 U	41000 U	420 U	1200 U	410 U	370 U	3700 U	4100 U	
1,3-Dichlorobenzene		2100 U	21000 U	2000 U	41000 U	420 U	1200 U	410 U	370 U	3700 U	4100 U	
1,4-Dichlorobenzene		2100 U	21000 U	2000 U	41000 U	420 U	1200 U	410 U	370 U	3700 U	4100 U	
1,2-Dichlorobenzene		2100 U	21000 U	2000 U	41000 U	420 U	1200 U	410 U	370 U	3700 U	4100 U	
2-Methylphenol		2100 U	21000 U	2000 U	41000 U	420 U	1200 UJ	410 UJ	370 U	3700 UJ	4100 UJ	
4-Methylphenol		2100 U	21000 U	230 J	41000 U	420 U	1200 U	410 U	93 J	3700 U	4100 U	
N-Nitroso-di-n-propylamine		2100 U	21000 U	2000 U	41000 U	420 U	1200 U	410 U	370 U	3700 U	4100 U	
2,4-Dimethylphenol		2100 U	21000 U	470 J	41000 U	420 U	1200 U	410 U	68 J	3700 U	4100 U	
2,4-Dichlorophenol		2100 U	21000 U	2000 U	41000 U	420 U	1200 U	410 U	370 U	3700 U	4100 U	
1,2,4-Trichlorobenzene		260 J	21000 U	230 J	41000 U	420 U	1200 U	410 U	370 U	3700 U	4100 U	
Naphthalene		3200	2600 DJ	4700	6400 DJ	200 J	6800	270 J	1400	1200 DJ	4100 U	
4-Chloroaniline		2100 U	21000 U	2000 U	41000 U	420 U	1200 U	410 U	370 U	3700 U	4100 U	
2-Methylnaphthalene		4000	3100 DJ	11000	14000 DJ	420 U	2600	130 J	900	870 DJ	4100 U	
Acenaphthylene		11000	3600 DJ	22000 E	17000 DJ	420 U	780 J	160 J	74 J	3700 U	4100 U	
Acenaphthene		450 J	21000 U	1900 J	41000 U	420 U	180 J	130 J	2300	2400 DJ	4100 U	
2,4-Dinitrophenol		5000 U	50000 U	4900 U	99000 U	1000 U	2900 U	1000 U	910 U	9100 U	9800 U	
Dibenzofuran		4000 J	3400 DJ	19000 E	23000 DJ	420 U	1000 J	230 J	1800	1400 DJ	4100 U	
Fluorene		8800 J	5800 DJ	41000 E	39000 DJ	420 U	330 J	430	4000 E	3100 DJ	4100 U	
4-Bromophenyl-phenylether		2100 U	21000 U	2000 U	41000 U	420 U	1200 U	410 U	370 UJ	3700 U	4100 U	
Phenanthenre		81000 E	54000 DJ	130000 E	250000 DJ	52 J	3300	680	30000 E	30000 D	4100 U	
Anthracene		20000 E	12000 DJ	51000 E	63000 DJ	420 U	910 J	180 J	5400 E	6000 D	4100 U	
Carbazole		3200	2300 DJ	6700	9300 DJ	420 U	300 J	410 U	2100	2200 DJ	4100 U	
Di-n-butyl phthalate		2100 U	21000 U	2000 U	41000 U	420 U	1200 U	84 J	370 U	3700 U	4100 U	
Fluoranthene		130000 E	99000 DJ	140000 E	310000 DJ	420 U	4800	1200	30000 E	20000 D	780 J	
Pyrene		83000 E	70000 DJ	120000 E	210000 DJ	420 U	3500	740	16000 E	20000 D	810 J	
Butyl Benzyl phthalate		2100 U	21000 U	2000 U	41000 U	420 U	1200 UJ	410 UJ	370 UJ	3700 UJ	4100 UJ	
3,3'-Dichlorobenzidine		2100 U	21000 U	2000 U	41000 U	420 UJ	1200 U	410 U	370 U	3700 U	4100 U	
Benzo(a)anthracene		44000 E	43000 D	65000 E	110000 D	420 U	4200	560	11000 E	10000 D	420 J	
Chrysene		42000 E	40000 DJ	61000 E	96000 DJ	420 U	5400	560	12000 E	11000 D	460 J	
bis(2-Ethylhexyl)phthalate		2100 U	21000 U	2000 U	41000 U	420 U	5400 J	57 J	170 J	3700 UJ	4100 UJ	
Di-n-octyl phthalate		2100 UU	21000 U	2000 U	41000 U	420 U	1200 UJ	410 UJ	370 UJ	3700 UJ	4100 UJ	
Benzo(b)fluoranthene		150000 XE	62000 DXJ	190000 XE	130000 DXJ	420 U	9300 XJ	660	15000 EX	11000 DXJ	4100 U	
Benzo(k)fluoranthene		150000 XE	67000 DXJ	190000 XE	140000 DXJ	420 U	9500 XJ	670	15000 EX	11000 DXJ	4100 U	
Benzo(a)pyrene		42000 E	27000 D	33000 E	64000 D	420 U	3900	190 J	6600 E	6100 D	4100 U	
Indeno(1,2,3-cd)pyrene		9800 J	11000 DJ	13000 J	23000 DJ	420 U	1900	140 J	1400	2600 DJ	4100 U	
Dibenzo(a,h)anthracene		3300 J	3500 DJ	5100 J	7200 DJ	420 U	670 J	49 J	720	740 DJ	4100 U	
Benzo(g,h,i)perylene		8400 J	9100 DJ	8700 J	15000 DJ	420 U	1200	110 J	870	1500 DJ	4100 U	

Data Qualifiers

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D = Indicates chemical was identified in an analysis at a secondary dilution factor.

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Concentrations presented in ug/L. Concentrations printed in bold italicized text are considered to reflect a validation of unnatural contamination.

TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID: 3-10C DL	MSB-11A	MSB-11ADL	MSB-11G	MSB-12A	MSB-12AD	MSB-12E	MSB-12ED	MSB-13A	MSB-13A DL
<u>SEMOVOLATILE ORGANICS</u>										
Phenol	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 U	390000 U
2-Chlorophenol	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 U	390000 U
1,3-Dichlorobenzene	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 U	390000 U
1,4-Dichlorobenzene	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 U	390000 U
1,2-Dichlorobenzene	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 U	390000 U
2-Methylphenol	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 UJ	390000 UJ
4-Methylphenol	8100 U	4200 U	170000 U	8400 U	400 U	85 J	430 U	430 U	150000 U	390000 U
N-Nitroso-di-n-propylamine	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 U	390000 U
2,4-Dimethylphenol	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 U	390000 U
2,4-Dichlorophenol	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 U	390000 U
1,2,4-Trichlorobenzene	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 U	390000 U
Naphthalene	8100 U	600000 E	830000 D	200000 E	400	1100	430 U	430 U	630000	710000 D
4-Chloroaniline	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 U	390000 U
2-Methylnaphthalene	8100 U	240000 E	170000 D	14000	430	1000	430 U	430 U	260000	310000 DJ
Acenaphthylene	8100 U	23000	19000 DJ	920 J	85 J	84 J	430 U	430 U	300000	350000 DJ
Acenaphthene	8100 U	3600 J	170000 U	8400 U	400 U	47 J	430 U	430 U	33000 J	40000 DJ
2,4-Dinitrophenol	20000 U	10000 U	410000 U	20000 U	970 U	940 U	1000 U	1000 U	370000 U	930000 UJ
Dibenzofuran	8100 U	15000	170000 U	1500 J	130 J	340 J	430 U	430 U	370000	430000 D
Fluorene	550 DJ	12000	170000 U	1500 J	110 J	180 J	430 U	430 U	670000	820000 D
4-Bromophenyl-phenylether	8100 U	4200 U	170000 U	8400 UJ	400 UU	390 UJ	430 U	430 UJ	150000 U	390000 U
Phenanthrene	2600 DJ	16000	170000 U	2700 J	1600	2600	430 U	430 U	2400000 E	2900000 D
Anthracene	8100 U	2800 J	170000 U	1100 J	180 J	260 J	430 U	430 U	440000	540000 D
Carbazole	8100 U	4200 U	170000 U	8400 U	98 J	190 J	430 U	430 U	260000	320000 DJ
Di-n-butyl phthalate	8100 U	4200 U	170000 U	8400 U	400 U	98 J	430 U	430 U	150000 U	390000 U
Fluoranthene	3000 DJ	9500	170000 U	1400 J	1300	1400	430 U	430 U	1500000 E	2200000 D
Pyrene	2600 DJ	6300 J	170000 U	1500 J	540	660	430 U	430 U	1100000	1200000 D
Butyl Benzyl phthalate	8100 U	4200 UJ	170000 UU	8400 UU	400 UU	390 UU	430 UU	430 UU	150000 UJ	390000 U
3,3'-Dichlorobenzidine	8100 U	4200 U	170000 U	8400 U	400 U	390 U	430 U	430 U	150000 U	390000 U
Benzo(a)anthracene	1800 DJ	3200 J	170000 U	8400 U	650	810	430 U	430 U	640000	780000 D
Chrysene	2100 DJ	4400	170000 U	8400 U	1200	1900	430 U	430 U	600000	750000 D
bis(2-Ethylhexyl)phthalate	8100 U	4200 UJ	170000 U	8400 UJ	97 J	140 J	430 UJ	430 UJ	150000 UJ	390000 U
Di-n-octyl phthalate	8100 U	4200 UJ	170000 U	8400 UJ	400 UU	390 UU	430 UU	430 UU	150000 UU	390000 U
Benzo(b)fluoranthene	2100 DXJ	11000 XJ	170000 U	8400 U	1200 XJ	1300 XJ	430 U	430 U	730000 XJ	1100000 DX
Benzo(k)fluoranthene	2200 DXJ	11000 XJ	170000 U	8400 U	1300 XJ	1400 XJ	430 U	430 U	730000 XJ	1100000 DX
Benzo(a)pyrene	1100 DJ	3400 J	170000 U	8400 U	450	360 J	430 U	430 U	420000	540000 D
Indeno(1,2,3-cd)pyrene	8100 U	1000 J	170000 U	8400 U	190 J	140 J	430 U	430 U	210000	140000 DJ
Dibenzo(a,h)anthracene	8100 U	4200 U	170000 U	8400 U	110 J	100 J	430 U	430 U	76000 J	390000 U
Benzo(g,h,i)perylene	8100 U	460 J	170000 U	8400 U	190 J	230 J	430 U	430 U	170000	100000 DJ

Data Qualifiers

U = The chemical was analyzed for , but not detected at or above the associated numerical value.

J = Quantitation is approximate because of limitations identified during the quality assurance review.

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X = The laboratory was unable to adequately resolve benzo(a)fluoranthene and benzo(k)fluoranthene.

E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

K = The chemical was detected in a blank at a similar concentration level.

Concentrations presented in ug/L. Concentrations printed in bold italicized text are considered to reflect a validation of unnatural contamination.

TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	MSB-13B	MSB-13B DL	MSB-13H	MSB-13H DL	MSB-13HD	MSB-13HD DL	MSB-14A	MSB-14A DL	MSB-14D	MSB-14D DL
<u>SEMOVOLATILE ORGANICS</u>											
Phenol		63000 U	210000 UJ	440 U	6600 U	410 U	2100 U	13000	9300 DJ	15000 EJ	120000 UJ
2-Chlorophenol		63000 U	210000 U	440 U	6600 U	410 U	2100 U	6200 U	21000 U	800 U	120000 U
1,3-Dichlorobenzene		63000 U	210000 U	440 U	6600 U	410 U	2100 U	6200 U	21000 U	800 U	120000 U
1,4-Dichlorobenzene		63000 U	210000 U	440 U	6600 U	410 U	2100 U	6200 U	21000 U	800 U	120000 U
1,2-Dichlorobenzene		63000 U	210000 U	440 U	6600 U	410 U	2100 U	6200 U	21000 U	800 U	120000 U
2-Methylphenol		63000 UJ	210000 UJ	440 U	6600 UJ	410 U	2100 U	2700 J	21000 U	3400	120000 UJ
4-Methylphenol		63000 U	210000 U	440 U	6600 U	410 U	2100 UU	6500	4600 DJ	3100	120000 U
N-Nitroso-di-n-propylamine		63000 U	210000 U	440 U	6600 U	410 U	2100 U	6200 U	21000 U	800 U	120000 U
2,4-Dimethylphenol		63000 U	210000 U	440 U	6600 U	410 U	2100 U	1200 J	21000 U	680 J	120000 U
2,4-Dichlorophenol		63000 U	210000 U	440 U	6600 U	410 U	2100 U	6200 U	21000 U	800 U	120000 U
1,2,4-Trichlorobenzene		63000 U	210000 U	440 U	6600 U	410 U	2100 U	6200 U	21000 U	800 U	120000 U
Naphthalene		910000 E	1100000 D	18000 E	42000 D	13000 E	15000 D	90000 E	98000 D	29000 E	340000 D
4-Chloroaniline		63000 U	210000 U	440 U	6600 U	410 U	2100 U	6200 U	21000 U	800 U	120000 U
2-Methylnaphthalene		400000	350000 D	9200 E	9400 D	3000 J	2200 D	28000	22000 D	26000 E	75000 DJ
Acenaphthylene		50000 J	47000 DJ	990 J	6600 U	71 J	2100 U	13000	11000 DJ	22000 E	29000 DJ
Acenaphthene		32000 J	27000 DJ	300 J	6600 U	410 U	2100 U	1700 J	21000 U	4200	120000 U
2,4-Dinitrophenol		150000 U	510000 UJ	1100 U	16000 U	1000 U	5000 U	15000 U	50000 UJ	1900 U	290000 UJ
Dibenzofuran		240000	220000 D	9900 E	6100 DJ	2100	1600 DJ	13000	11000 DJ	52000 E	36000 DJ
Fluorene		340000	320000 D	6200 E	4100 DJ	500 J	470 DJ	21000	17000 DJ	80000 E	51000 DJ
4-Bromophenyl-phenylether		63000 U	210000 U	440 UU	6600 U	410 UU	2100 U	6200 U	21000 U	800 UW	120000 U
Phenantrhene		950000 E	860000 D	25000 E	28000 DJ	9100 E	5700 DJ	50000	41000 D	37000 E	130000 D
Anthracene		260000	240000 D	5300 E	5100 DJ	390 J	320 DJ	17000	15000 DJ	6700 E	31000 DJ
Carbazole		1200000	1200000 DJ	200 J	6600 U	73 J	2100 U	12000	11000 DJ	4800 E	16000 DJ
Di-n-butyl phthalate		63000 U	210000 U	92 J	6600 U	70 J	2100 U	6200 U	21000 U	800 U	120000 U
Fluoranthene		610000 E	780000 D	21000 E	19000 DJ	4000 E	3200 DJ	45000	51000 D	32000 E	100000 DJ
Pyrene		4600000	460000 D	9900 E	13000 DJ	1700 J	1700 DJ	37000	32000 D	16000 E	55000 DJ
Butyl Benzyl phthalate		63000 UJ	210000 U	440 UJ	6600 UJ	410 UJ	2100 UJ	6200 UJ	21000 U	800 UW	120000 U
3,3'-Dichlorobenzidine		63000 U	210000 U	440 U	6600 U	410 U	2100 U	6200 U	21000 U	800 U	120000 U
Benzo(a)anthracene		3300000	340000 D	8900 E	7900 DJ	820 J	750 DJ	25000	23000 D	16000 E	40000 DJ
Chrysene		2800000	290000 D	6600 E	6200 DJ	630 J	560 DJ	22000	20000 DJ	11000 E	32000 DJ
bis(2-Ethylhexyl)phthalate		63000 UJ	210000 U	73 J	6600 UJ	45 J	2100 UJ	6200 UJ	21000 U	800 UW	120000 U
Di-n-octyl phthalate		63000 UJ	210000 U	440 UU	6600 UU	410 UU	2100 UU	6200 UU	21000 U	800 UW	120000 U
Benzo(b)fluoranthene		400000 X	450000 DX	12000 EX	9300 DXJ	950 XJ	790 DXJ	31000 XJ	34000 D	26000 EX	51000 DJX
Benzo(k)fluoranthene		400000 X	450000 DX	12000 EX	9500 DXJ	990 XJ	810 DXJ	32000 XJ	34000 D	27000 EX	51000 DJX
Benzo(a)pyrene		2500000	250000 D	6900 E	5800 DJ	510 J	360 DJ	22000	20000 DJ	13000 E	26000 DJ
Indeno(1,2,3-cd)pyrene		1200000	590000 DJ	2000	2400 DJ	190 J	2100 U	11000	5400 DJ	6300	120000 U
Dibenzo(a,h)anthracene		30000 J	210000 U	490 J	6600 U	410 UJ	2100 U	2800 J	21000 U	4000	120000 U
Benzo(g,h,i)perylene		1000000	44000 DJ	870 J	1200 DJ	170 J	2100 U	11000	5200 DJ	6300	120000 U

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E = Quantitation is approximate because the concentration reported from the initial analysis exceeded the linear calibration range.

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Concentrations presented in ug/L. Concentrations printed in bold italicized text are considered to reflect a validation of unnatural contamination.

TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID: MSB-15A	MSB-15C	MSB-16A	MSB-16C	MSB-17A	MSB-17B	MSB-18A	MSB-18B	MSB-19A	MSB-19ADL
<u>SEMOVOLATILE ORGANICS</u>										
Phenol	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
2-Chlorophenol	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
1,3-Dichlorobenzene	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
1,4-Dichlorobenzene	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
1,2-Dichlorobenzene	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
2-Methylphenol	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
4-Methylphenol	49 J	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
N-Nitroso-di-n-propylamine	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
2,4-Dimethylphenol	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
2,4-Dichlorophenol	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
1,2,4-Trichlorobenzene	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
Naphthalene	3300	440 U	560	220 J	3200	440 U	3900	420 U	1500 DJ	2000 J
4-Chloroaniline	420 U	440 U	410 U	410 U	860 U	440 U	1200	420 U	2000 U	6000 U
2-Methylnaphthalene	1800	440 U	360 J	450	770 J	440 U	1500	420 U	460 DJ	640 J
Acenaphthylene	570	440 U	87 J	410 U	220 J	440 U	450 J	420 U	940 DJ	1400 J
Acenaphthene	92 J	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
2,4-Dinitrophenol	1000 U	1100 U	1000 U	990 U	2100 U	1100 U	1900 U	1000 U	4900 UJ	15000 U
Dibenzofuran	600	440 U	110 J	140 J	350 J	440 U	510 J	420 U	330 J	440 DJ
Fluorene	180 J	440 U	54 J	410 U	3300	440 U	160 J	420 U	220 J	360 DJ
4-Bromophenyl-phenylether	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
Phenantrhene	2000	440 U	620	510	1300	440 U	1600	420 U	2400	3600 J
Anthracene	300 J	440 U	110 J	45 J	170 J	440 U	370 J	420 U	800 J	1200 J
Carbazole	280 J	440 U	44 J	410 U	860 U	440 U	160 J	420 U	380 J	6000 U
Di-n-butyl phthalate	50 J	51 J	50 J	410 U	860 U	48 J	800 U	420 U	2000 U	6000 U
Fluoranthene	2300	440 U	570	810	1700	440 U	2500	420 U	7700	10000
Pyrene	1700	440 U	350 J	610	1100	440 U	1800	420 U	9100	12000
Butyl Benzyl phthalate	420 UJ	440 UJ	410 UJ	410 UJ	860 UJ	440 UJ	800 UJ	420 UJ	2000 U	6000 U
3,3'-Dichlorobenzidine	420 U	440 U	410 U	410 U	860 U	440 U	800 U	420 U	2000 U	6000 U
Benzo(a)anthracene	1300	440 U	500	880	850 J	440 U	1600	420 U	6800	9000
Chrysene	1800	440 U	900	940	1100	440 U	1800	420 U	6800	9500
bis(2-Ethylhexyl)phthalate	420 UJ	440 UJ	410 UJ	410 UJ	860 UJ	440 UJ	800 UJ	420 UJ	2000 U	6000 U
Di-n-octyl phthalate	420 U	440 U	410 UU	410 UU	860 UU	440 UU	800 UU	420 UU	2000 U	6000 U
Benzo(b)fluoranthene	2900 XJ	440 U	1300 XJ	2700 XJ	1000	440 U	4800 XJ	420 U	17000 E	21000 D
Benzo(k)fluoranthene	2700 XJ	440 U	1500 XJ	3100 XJ	1100 J	440 U	5400 XJ	420 U	16000 E	21000 D
Benzo(a)pyrene	870	440 U	460	1100	260 J	440 U	1500	420 U	8900	9000
Indeno(1,2,3-cd)pyrene	500	440 U	360 J	360 J	860 U	440 U	1200	420 U	4500	12000
Dibenzo(a,h)anthracene	310 J	440 U	200 J	120 J	860 U	440 U	800 U	420 U	1400 J	6000 U
Benzo(g,h,i)perylene	540	440 U	310 J	350 J	860 U	440 U	1000	420 U	4300	11000

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Concentrations presented in ug/L. Concentrations printed in bold italicized text are considered to reflect a validation of unnatural contamination.

TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID: MSB-19E	MSB-19ERE	MSB-20A	MSB-20AD	MSB-20D	MSB-21A	MSB-21B	MSB-22A	MSB-22E	MSB-22ED
<u>SEMOVOLATILE ORGANICS</u>										
Phenol	450 UU	14000 UU	2000 U	3200 U	420 UJ	6600 U	420 U	380 U	420 UJ	420 UU
2-Chlorophenol	450 UU	14000 UU	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
1,3-Dichlorobenzene	450 UU	14000 UU	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
1,4-Dichlorobenzene	450 UU	14000 UU	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
1,2-Dichlorobenzene	450 UU	14000 UU	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
2-Methylphenol	450 UU	14000 UU	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
4-Methylphenol	450 UU	14000 UU	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
N-Nitroso-di-n-propylamine	450 UU	14000 UU	2000 U	3200 U	420 UJ	6600 U	420 U	380 U	420 UU	420 UU
2,4-Dimethylphenol	450 U	14000 UU	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
2,4-Dichlorophenol	450 U	14000 UU	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
1,2,4-Trichlorobenzene	450 U	14000 UU	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
Naphthalene	2000	2800 J	2200	3000 J	420 U	1100 J	420 U	150 J	420 U	420 U
4-Chloroaniline	450 U	14000 UU	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
2-Methylnaphthalene	440 J	14000 UU	1200 J	1500 J	420 U	1700 J	420 U	190 J	420 U	420 U
Acenaphthylene	3400	14000 UU	830 J	830 J	420 U	1400 J	420 U	380 U	420 U	420 U
Acenaphthene	14000 E	12000 J	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
2,4-Dinitrophenol	1100 U	34000 UU	4800 U	7700 U	1000 U	16000 U	1000 U	930 U	1000 U	1000 U
Dibenzofuran	14000 E	15000 J	630 J	840 J	420 U	6600 U	420 U	380 U	420 U	420 U
Fluorene	19000 E	20000 J	370 J	480 J	420 U	6600 U	420 U	380 U	420 U	420 U
4-Bromophenyl-phenylether	450 U	14000 UU	2000 U	3200 U	100 J	6600 U	420 U	380 U	110 J	98 J
Phenanthrene	34000 E	54000 J	4800	7800	420 U	1600 J	450	150 J	420 U	420 U
Anthracene	11000 E	12000 J	1400 J	1500 J	420 U	940 J	420 U	380 U	420 U	420 U
Carbazole	10000 E	3800 J	410 J	910 J	420 U	6600 U	420 U	380 U	420 U	420 U
Di-n-butyl phthalate	89 J	14000 UU	2000 U	350 JK	100 J	6600 U	120 J	64 J	48 J	51 J
Fluoranthene	26000 E	35000 J	13000	11000	420 U	4600 J	420 U	88 J	420 U	420 U
Pyrene	41000 E	24000 J	11000	13000	420 U	6200 J	420 U	110 J	420 U	420 U
Butyl Benzyl phthalate	450 U	14000 UU	2000 U	3200 U	420 U	6600 U	420 U	380 U	420 U	420 U
3,3'-Dichlorobenzidine	450 UU	14000 UU	2000 U	3200 U	420 UJ	6600 U	420 UJ	380 UU	420 UU	420 UU
Benzo(a)anthracene	21000 E	12000 J	11000	8100	420 U	6800	81 J	76 J	420 U	420 U
Chrysene	17000 E	8800 J	8400	8000	420 U	8500	93 J	130 J	420 U	420 U
bis(2-Ethylhexyl)phthalate	450 U	14000 UJ	2000 U	3200 U	420 U	6600 U	66 J	380 U	420 U	420 U
Di-n-octyl phthalate	450 UU	14000 UU	2000 UU	3200 U	420 U	6600 UU	420 U	380 U	420 U	420 U
Benzo(b)fluoranthene	63000 XE	18000 XJ	14000 XJ	12000 XJ	420 U	25000 X	65 JX	110 JX	420 U	420 U
Benzo(k)fluoranthene	55000 XE	14000 XJ	14000 XJ	12000 XJ	420 U	27000 X	59 JX	97 JX	420 U	420 U
Benzo(a)pyrene	24000 E	9000 J	7600	6300	420 U	11000	420 U	40 J	420 U	420 U
Indeno(1,2,3-cd)pyrene	6400 EJ	14000 UU	6400	5400	420 U	11000	420 U	380 U	420 U	420 U
Dibenzo(a,h)anthracene	1700 J	14000 UU	2000 J	3200 UU	420 U	4700 J	420 U	380 U	420 U	420 U
Benzo(g,h,i)perylene	6400 EJ	14000 UU	6400	6500	420 U	11000	420 U	380 U	420 U	420 U

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TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID: MSB-23A	MSB-23D	MSB-24A	MSB-24D	MSB-25A	MSB-25D	MSB-26A	MSB-26C	MSB-27A	MSB-27AD	MSI
<u>SEMOVOLATILE ORGANICS</u>											
Phenol	2000 UJ	410 U	3900 U	400 U	15000 U	430 UJ	1900 U	500 U	2400 U	5000 U	
2-Chlorophenol	2000 U	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 U	2400 U	5000 U	
1,3-Dichlorobenzene	2000 U	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 U	2400 U	5000 U	
1,4-Dichlorobenzene	2000 U	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 U	2400 U	5000 U	
1,2-Dichlorobenzene	2000 U	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 U	2400 U	5000 U	
2-Methylphenol	2000 U	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 U	2400 U	5000 U	
4-Methylphenol	2000 U	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 U	2400 U	5000 U	
N-Nitroso-di-n-propylamine	2000 UJ	410 U	3900 U	400 U	15000 U	430 UJ	1900 U	500 U	2400 U	5000 U	
2,4-Dimethylphenol	2000 U	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 U	2400 U	5000 U	
2,4-Dichlorophenol	2000 U	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 U	2400 U	5000 U	
1,2,4-Trichlorobenzene	2000 U	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 U	2400 U	5000 U	
Naphthalene	1200 J	410 U	4400	400 U	15000	430 U	1000 J	500 U	8400	9600	
4-Chloroaniline	2000 U	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 U	2400 U	5000 U	
2-Methylnaphthalene	1200 J	410 U	2500 J	400 U	6200 J	430 U	910 J	500 U	17000	16000	
Acenaphthylene	270 J	410 U	640 J	400 U	6300 J	430 U	1900 U	500 U	2400 UJ	11000 J	
Acenaphthene	2000 U	410 U	760 J	400 U	15000 U	430 U	1900 U	500 U	3600	3700 J	
2,4-Dinitrophenol	4800 U	1000 UJ	9400 U	960 U	36000 U	1000 U	4700 U	1200 UJ	5700 U	12000 UJ	
Dibenzofuran	470 J	410 U	1200 J	400 U	9300 J	430 U	300 J	500 U	2400 UJ	14000 J	
Fluorene	2000 U	410 U	1100 J	400 U	15000	430 U	1900 U	500 U	6800 J	21000 J	
4-Bromophenyl-phenylether	2000 U	410 U	3900 U	400 U	15000 U	110 J	1900 U	500 U	2400 U	5000 U	
Phenanthrene	2100	410 U	4600	43 J	78000	430 U	4600	60 J	15000 J	160000 E	
Anthracene	510 J	410 U	3700 J	400 U	25000	430 U	750 J	500 U	500 J	49000 E	
Carbazole	2000 U	410 U	410 J	400 U	11000 J	430 U	1900 U	500 U	2400 UJ	13000 J	
Di-n-butyl phthalate	2000 U	60 J	3900 U	71 J	15000 U	65 J	460 JK	250 J	2400 U	5000 U	
Fluoranthene	7400	410 U	15000	150 J	66000	430 U	10000	190 J	6000 J	310000 E	
Pyrene	7100 J	44 J	19000	170 J	53000	430 U	8700	140 J	2800 J	210000 E	
Butyl Benzyl phthalate	630 J	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 UJ	2400 U	5000 UJ	
3,3'-Dichlorobenzidine	2000 UJ	410 U	3900 U	400 UJ	15000 U	430 UJ	1900 U	500 U	2400 U	5000 U	
Benzo(a)anthracene	3000	410 U	9700	82 J	32000	430 U	6200	100 J	2000 J	240000 E	
Chrysene	3200	410 U	9900	89 J	36000	430 U	6000	130 J	1600 J	150000 E	
bis(2-Ethylhexyl)phthalate	630 J	410 U	3900 U	400 U	15000 U	430 U	1900 U	500 UJ	2400 U	5000 UJ	
Di-n-octyl phthalate	2000 UJ	410 U	3900 UJ	400 U	15000 U	430 U	1900 UJ	500 UJ	2400 U	5000 U	
Benzo(b)fluoranthene	6400 XJ	410 U	12000 XJ	55 XJ	36000	430 U	7500 XJ	240 XJ	3100 J	340000 XE	
Benzo(k)fluoranthene	6500 XJ	410 U	12000 XJ	52 XJ	35000	430 U	7900 XJ	250 XJ	3600 J	330000 XE	
Benzo(a)pyrene	2300 J	410 U	5500	400 U	19000	430 U	3600	62 J	1500 J	130000 E	
Indeno(1,2,3-cd)pyrene	860 J	410 U	3900	400 U	15000	430 U	3100	71 J	1100 J	51000 E	
Dibenzo(a,h)anthracene	390 J	410 U	1100 J	400 U	6200 J	430 U	720 J	500 U	350 J	18000 J	
Benzo(g,h,i)perylene	920 J	410 U	3600 J	400 U	14000 J	430 U	3300	500 U	620 J	35000 J	

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TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID: B-27ADDL	MSB-27C	MSB-28A	MSB-28F	MSB-28FD	MSB-28I	MSB-29B	MSB-29BDL	MSB-29H	MSB-29HDL
<u>SEMICOLVATILE ORGANICS</u>										
Phenol	74000 U	840 U	470 U	550 U	550 U	570 U	1500 J	55000 U	67 J	1700 U
2-Chlorophenol	74000 U	840 U	470 U	550 U	550 U	570 U	3600 U	55000 U	420 U	1700 U
1,3-Dichlorobenzene	74000 U	840 U	470 U	550 U	550 U	570 U	3600 U	55000 U	420 U	1700 U
1,4-Dichlorobenzene	74000 U	840 U	470 U	550 U	550 U	2300	3600 U	55000 U	420 U	1700 U
1,2-Dichlorobenzene	74000 U	840 U	470 U	550 U	550 U	1300	3600 U	55000 U	420 U	1700 U
2-Methylphenol	74000 U	840 U	470 U	79 J	550 U	2800	2900 J	55000 U	420 U	1700 U
4-Methylphenol	74000 U	840 U	470 U	550 U	280 J	570 U	3700	55000 U	420 U	1700 U
N-Nitroso-di-n-propylamine	74000 U	840 U	470 U	550 UU	550 UU	570 U	3600 U	55000 U	420 U	1700 U
2,4-Dimethylphenol	74000 U	840 U	470 U	550 U	550 U	570 U	3100 J	55000 U	420 U	1700 U
2,4-Dichlorophenol	74000 U	840 U	470 U	550 U	550 U	570 U	3600 U	55000 U	420 U	1700 U
1,2,4-Trichlorobenzene	74000 U	840 U	140 J	550 U	550 U	310 J	3600 U	55000 U	420 U	1700 U
Naphthalene	10000 DJ	4100	870	550 U	550 U	570 U	160000 E	330000 D	5600 E	7100 D
4-Chloroaniline	74000 U	840 U	470 U	550 U	550 U	570 U	3600 U	55000 U	420 U	1700 U
2-Methylnaphthalene	16000 DJ	2600	1600	550 U	550 U	570 U	110000 E	180000 D	4300 E	5100 D
Acenaphthylene	74000 U	840 U	470 U	550 U	550 U	570 U	17000	20000 DJ	500	490 DJ
Acenaphthene	74000 U	840 U	470 U	550 U	550 U	570 U	4200	55000 U	210 J	200 DJ
2,4-Dinitrophenol	180000 U	2000 UJ	1100 U	1300 UU	1300 UU	1400 U	8800 U	130000 U	1000 U	4100 U
Dibenzofuran	15000 DJ	280 J	420 J	550 U	550 U	570 U	17000	19000 DJ	640	610 DJ
Fluorene	25000 DJ	1600	470 U	550 U	550 U	570 U	15000	17000 DJ	630	600 DJ
4-Bromophenyl-phenylether	74000 U	840 U	470 U	550 U	550 U	570 U	3600 U	55000 U	420 U	1700 U
Phenanthenre	230000 DJ	920	1200	550 U	550 U	170 J	11000	12000 D J	560	580 D J
Anthracene	52000 DJ	210 J	75 J	550 U	550 U	98 J	2100 J	55000 U	120 J	1700 U
Carbazole	12000 DJ	840 U	90 J	550 U	550 U	570 U	390 J	55000 U	420 U	1700 U
Di-n-butyl phthalate	74000 U	270 JK	120 J	170 J	270 J	570 U	3600 U	55000 U	420 U	210 DJK
Fluoranthene	430000 DJ	1200	1300	550 U	550 U	570 U	3400 J	55000 U	210 J	250 DJ
Pyrene	330000 DJ	690 J	1000	550 UU	550 UU	570 U	2200 J	55000 U	140 J	140 DJ
Butyl Benzyl phthalate	74000 U	840 U	470 U	550 U	550 UU	570 U	3600 UU	55000 UU	420 UU	1700 UU
3,3'-Dichlorobenzidine	74000 U	840 U	470 U	550 U	550 U	570 U	3600 U	55000 U	420 U	1700 U
Benzo(a)anthracene	190000 DJ	440 J	1100	550 U	550 U	570 U	1200 J	55000 U	77 J	1700 U
Chrysene	160000 D	650 J	1100	550 U	550 U	570 U	1000 J	55000 U	74 J	1700 U
bis(2-Ethylhexyl)phthalate	74000 U	840 U	470 U	550 U	550 U	570 U	3600 UU	55000 UU	420 UU	1700 UU
Di-n-octyl phthalate	74000 U	840 U	470 U	70 J	550 UU	570 U	3600 UU	55000 UU	420 UU	1700 UU
Benzo(b)fluoranthene	230000 DXJ	550 XJ	2000 XJ	550 U	550 U	570 U	1500 JX	55000 U	93 JX	470 DJX
Benzo(k)fluoranthene	270000 DXJ	700 XJ	2300 XJ	550 U	550 U	570 U	1400 JX	55000 U	95 JX	440 DJX
Benzo(a)pyrene	140000 DJ	230 J	720	550 U	550 U	570 U	840 J	55000 U	420 U	470 DJ
Indeno(1,2,3-cd)pyrene	76000 DJ	200 J	580	550 U	550 U	570 U	3600 U	55000 U	420 U	1700 U
Dibenzo(a,h)anthracene	25000 D J	840 U	190 J	550 U	550 U	570 U	3600 U	55000 U	420 U	1700 U
Benzo(g,h,i)perylene	51000 DJ	160 J	290 J	550 U	550 U	570 U	3600 U	55000 U	420 U	1700 U

Data Qualifiers

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D = Indicates chemical was identified in an analysis at a secondary dilution factor.

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Concentrations presented in ug/L. Concentrations printed in bold italicized text are considered to reflect a validation of unnatural contamination.

TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	MSB-30A	MSB-30ADL	MSB-30F	MSB-31A	MSB-31ADL	MSB-31F	MSB-32A	MSB-32ADL	MSB-33A	MSB-33E
<u>SEMITRIVOLATILE ORGANICS</u>											
Phenol		590	J	36000 U	420 U	380 U	760 U	410 U	350 U	700 U	460 U
2-Chlorophenol		1800	U	36000 U	420 U	380 U	760 U	410 U	350 U	700 U	460 U
1,3-Dichlorobenzene		1800	U	36000 U	420 U	380 U	760 U	410 U	350 U	700 U	460 U
1,4-Dichlorobenzene		1800	U	36000 U	420 U	380 U	760 U	410 U	350 U	700 U	460 U
1,2-Dichlorobenzene		1800	U	36000 U	420 U	380 U	760 U	410 U	350 U	700 U	460 U
2-Methylphenol		1800	U	36000 U	420 U	380 U	760 U	410 U	350 U	700 U	460 U
4-Methylphenol		540	J	36000 U	420 U	46 J	760 U	46 J	350 U	700 U	460 U
N-Nitroso-di-n-propylamine		1800	U	36000 U	420 U	380 U	760 U	410 U	350 U	700 U	460 U
2,4-Dimethylphenol		430	J	36000 U	420 U	380 U	100 DJ	410 U	350 U	700 U	460 U
2,4-Dichlorophenol		1800	U	36000 U	420 U	380 U	760 U	410 U	350 U	700 U	460 U
1,2,4-Trichlorobenzene		460	J	36000 U	420 U	53 J	760 U	410 U	350 U	700 U	460 U
Naphthalene		39000	E	38000 D	170 J	740	740 DJ	410 U	1300	1200 D	630
4-Chloroaniline		1800	U	36000 U	420 U	380 U	760 U	410 U	350 U	700 U	460 U
2-Methylnaphthalene		27000	E	23000 DJ	88 J	1500	1600 D	410 U	1700	1700 D	480
Acenaphthylene		31000	E	24000 DJ	53 J	94 J	760 U	410 U	120 J	90 DJ	46 J
Acenaphthene		3900		3800 DJ	420 U	58 J	760 U	410 U	500	480 DJ	120 J
2,4-Dinitrophenol		4300	U	87000 U	1000 U	920 U	1800 U	990 U	850 U	1700 UJ	1100 U
Dibenzofuran		39000	E	38000 D	120 J	430	410 DJ	410 U	660	570 DJ	360 J
Fluorene		76000	E	74000 D	250 J	380 U	760 U	410 U	550	420 DJ	71 J
4-Bromophenyl-phenylether		1800	U	36000 U	420 U	380 U	760 U	410 U	350 U	700 U	460 U
Phenanthrene		330000	E	280000 D	590	1300	1300 D	410 U	1700	2000 D	730
Anthracene		76000	E	70000 D	210 J	110 J	100 DJ	410 U	280 J	350 DJ	130 J
Carbazole		48000	E	25000 DJ	61 J	120 J	99 DJ	410 U	110 J	140 DJ	60 J
Di-n-butyl phthalate		270	J	36000 U	420 UJ	380 UJ	190 DJK	410 U	350 U	700 U	460 U
Fluoranthene		250000	E	260000 D	1100	1700	1500 D	410 U	3100	E	3000 D
Pyrene		140000	E	160000 D	840	1000	1300 D	410 U	2000	2400 D	1000
Butyl Benzyl phthalate		1800	UJ	36000 UJ	420 U	380 UJ	760 UJ	410 UJ	350 UJ	700 U	460 UJ
3,3'-Dichlorobenzidine		1800	U	36000 U	420 UJ	380 U	760 U	410 U	350 U	700 U	460 U
Benzo(a)anthracene		160000	E	96000 D	600	1100	1000 D	410 U	1100	900 D	630
Chrysene		100000	E	84000 D	450	1500	1600 D	410 U	1000	1200 D	700
bis(2-Ethylhexyl)phthalate		780	J	36000 UJ	420 UJ	52 J	760 UJ	410 UJ	130 J	150 DJ	460 UJ
Di-n-octyl phthalate		1800	U	36000 UJ	420 U	380 UJ	760 UJ	410 UJ	350 UJ	700 U	460 UJ
Benzo(b)fluoranthene		210000	XE	130000 DXJ	730 XJ	4100	XE	3400 DXJ	410 U	1500 X	1900 DX
Benzo(k)fluoranthene		200000	XE	120000 DXJ	740 XJ	4200	XE	3200 DXJ	410 U	1500 X	1500 DX
Benzo(a)pyrene		88000	E	64000 D	380 J	960	1000 D	410 U	490	650 DJ	350 J
Indeno(1,2,3-cd)pyrene		24000	E	30000 DJ	210 J	540	740 DJ	410 U	230 J	460 DJ	320 J
Dibenzo(a,h)anthracene		13000		15000 DJ	68 J	180 J	460 DJ	410 U	170 J	300 DJ	120 J
Benzo(g,h,i)perylene		20000	E	21000 DJ	200 J	360 J	570 DJ	410 U	110 J	180 DJ	280 J

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Concentrations presented in ug/L. Concentrations printed in bold italicized text are considered to reflect a validation of unnatural contamination.

TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID: MSB-34A	MSB-34F	MSB-35A	MSB-35ADL	MSB-35B	MSB-36A	MSB-36ADL	MSB-36C	MSB-37A	MSB-37C
<u>SEMOVOLATILE ORGANICS</u>										
Phenol	420 U	430 U	430 U	850 U	400 U	340 J	660 DJ	440 U	530 U	550 U
2-Chlorophenol	420 U	430 U	430 U	850 U	400 U	470 U	4700 U	440 U	530 U	550 U
1,3-Dichlorobenzene	420 U	430 U	430 U	850 U	400 U	470 U	4700 U	440 U	530 U	550 U
1,4-Dichlorobenzene	420 U	430 U	430 U	850 U	400 U	49 J	4700 U	52 J	530 U	550 U
1,2-Dichlorobenzene	420 U	430 U	430 U	850 U	400 U	470 U	4700 U	440 U	530 U	550 U
2-Methylphenol	420 U	430 U	390 J	340 DJ	400 U	400 J	4700 U	440 U	530 U	550 U
4-Methylphenol	150 J	430 U	940	870 D	400 U	640	820 DJ	440 U	530 U	550 U
N-Nitroso-di-n-propylamine	420 U	430 U	430 U	850 U	400 U	470 U	4700 U	440 U	530 UU	550 UU
2,4-Dimethylphenol	88 J	430 U	300 J	320 DJ	400 U	270 J	4700 U	440 U	530 U	550 U
2,4-Dichlorophenol	420 U	430 U	430 U	850 U	400 U	470 U	4700 U	440 U	530 U	550 U
1,2,4-Trichlorobenzene	420 U	430 U	430 U	850 U	400 U	74 J	4700 U	440 U	530 U	550 U
Naphthalene	1500	55 J	1900	1600 D	400 U	4700 E	6100 D	150 J	970	90 J
4-Chloroaniline	420 U	430 U	430 U	850 U	400 U	470 U	4700 U	440 U	530 U	550 U
2-Methylnaphthalene	540	430 U	4000 E	3900 D	400 U	2200	2600 DJ	58 J	610	550 U
Acenaphthylene	170 J	430 U	430 U	850 U	400 U	1000	880 DJ	440 U	530 U	550 U
Acenaphthene	49 J	430 U	260 J	250 DJ	400 U	230 J	4700 U	440 U	530 U	550 U
2,4-Dinitrophenol	52 J	1000 U	1000 U	2100 U	970 U	1100 UW	11000 UU	1100 UW	1300 UW	1300 UW
Dibenzofuran	330 J	430 U	1300	1200 D	400 U	1200	1500 DJ	440 U	180 J	550 U
Fluorene	230 J	430 U	240 J	240 DJ	400 U	630	1200 DJ	440 U	2900	550 U
4-Bromophenyl-phenylether	420 U	430 U	430 U	850 U	400 U	470 U	4700 U	440 U	530 U	550 U
Phenanthrene	1400	430 U	4800 E	3700 D	400 U	9100 E	9700 D	170 J	530 U	550 U
Anthracene	250 J	430 U	1000	940 D	400 U	1900	2400 DJ	440 U	530 U	550 U
Carbazole	230 J	430 U	260 J	240 DJ	400 U	950	1100 DJ	440 U	530 U	550 U
Di-n-butyl phthalate	420 U	430 U	430 U	850 U	400 U	470 U	4700 U	250 J	200 J	210 J
Fluoranthene	1900	430 U	6500 E	5500 D	400 U	15000 E	20000 D	270 J	900	550 U
Pyrene	1200	430 U	4000 E	3800 D	400 U	11000 E	15000 D	240 J	730 J	550 UW
Butyl Benzyl phthalate	420 UW	430 UW	430 U	850 UW	400 UW	470 UW	4700 U	440 UW	530 UW	550 UW
3,3'-Dichlorobenzidine	420 U	430 U	430 U	850 U	400 U	470 U	4700 U	440 U	530 U	550 U
Benzo(a)anthracene	1200	430 U	5000 E	3300 D	400 U	14000 E	12000 D	190 J	660	72 J
Chrysene	1600	430 U	4000 E	3200 D	400 U	10000 E	11000 D	210 J	950	77 J
bis(2-Ethylhexyl)phthalate	89 J	430 UW	77 J	850 UW	400 UW	200 J	4700 U	440 U	530 U	550 U
Di-n-octyl phthalate	420 UW	430 UW	430 U	850 UW	400 UW	470 U	4700 U	440 UW	530 U	550 UW
Benzo(b)fluoranthene	2600 XJ	430 U	7400 XE	5300 DXJ	400 U	26000 XE	18000 DXJ	290 XJ	1400 XJ	110 XJ
Benzo(k)fluoranthene	2600 XJ	430 U	7500 XE	4900 DXJ	400 U	26000 XE	21000 DXJ	390 XJ	1800 XJ	150 XJ
Benzo(a)pyrene	690	430 U	2100	1800 D	400 U	9200 E	9700 D	150 J	460 J	41 J
Indeno(1,2,3-cd)pyrene	480	430 U	840	1200 D	400 U	4800 E	6900 D	65 J	230 J	550 U
Dibenzo(a,h)anthracene	140 J	430 U	310 J	420 DJ	400 U	1600	3100 DJ	440 U	530 U	550 U
Benzo(g,h,i)perylene	230 J	430 U	530	630 DJ	400 U	2600	4100 DJ	440 U	140 J	550 U

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TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID: MSB-38A	MSB-38ADL	MSB-38C	MSB-38CD	MSB-39A	MSB-39ADL	MSB-40A	MSB-40B	MSB-40BDL	MSB-41A
<u>SEMOVOLATILE ORGANICS</u>										
Phenol	5400	U	11000	U	500	U	510	U	5200	U
2-Chlorophenol	5400	U	11000	U	500	U	510	U	5200	U
1,3-Dichlorobenzene	5400	U	11000	U	500	U	510	U	5200	U
1,4-Dichlorobenzene	5400	U	11000	U	500	U	510	U	5200	U
1,2-Dichlorobenzene	5400	U	11000	U	500	U	510	U	5200	U
2-Methylphenol	5400	U	11000	U	500	U	510	U	5200	U
4-Methylphenol	5400	U	11000	U	500	U	510	U	5200	U
N-Nitroso-di-n-propylamine	5400	U	11000	U	500	UJ	510	UJ	5200	U
2,4-Dimethylphenol	5400	U	11000	U	500	U	510	U	5200	U
2,4-Dichlorophenol	5400	U	11000	U	500	U	510	U	5200	U
1,2,4-Trichlorobenzene	5400	U	11000	U	500	U	510	U	5200	U
Naphthalene	45000	E	29000	D	120	J	210	J	17000	16000 DJ
4-Chloroaniline	5400	U	11000	U	500	U	510	U	5200	U
2-Methylnaphthalene	19000		11000	D	500	U	60	J	7300	7400 DJ
Acenaphthylene	2300	J	1200	DJ	500	U	510	U	5900	3600 DJ
Acenaphthene	6900		4200	DJ	500	U	510	U	14000	13000 DJ
2,4-Dinitrophenol	13000	UJ	26000	UJ	1200	UJ	13000	UJ	63000	U
Dibenzofuran	10000		6700	DJ	500	U	510	U	19000	19000 DJ
Fluorene	15000	U	9200	DJ	500	U	510	U	27000	27000 D
4-Bromophenyl-phenylether	5400	U	11000	U	500	U	510	U	5200	U
Phenantrhene	58000	E	37000	D	250	J	280	J	100000 E	120000 D
Anthracene	13000		7900	DJ	500	U	510	U	34000	25000 DJ
Carbazole	4400	J	2900	DJ	500	U	510	U	9300	8600 DJ
Di-n-butyl phthalate	5400	U	11000	U	140	J	120	J	5200	U
Fluoranthene	65000	E	39000	D	450	J	440	J	160000 E	170000 D
Pyrene	44000	E	29000	D	400	J	420	J	100000 E	120000 D
Butyl Benzyl phthalate	5400	UJ	11000	UJ	500	UJ	510	UJ	5200	UJ
3,3'-Dichlorobenzidine	5400	U	11000	U	500	U	510	U	5200	U
Benzo(a)anthracene	31000		19000	D	210	J	240	J	84000	76000 D
Chrysene	33000		20000	D	270	J	310	J	71000	60000 D
bis(2-Ethylhexyl)phthalate	5400	UJ	11000	UJ	500	U	510	U	5200	UJ
Di-n-octyl phthalate	5400	U	11000	U	500	UJ	510	UJ	5200	U
Benz(b)fluoranthene	64000	XE	36000	DXJ	390	XJ	480	XJ	150000 XE	100000 DXJ
Benzo(k)fluoranthene	62000	XE	35000	DXJ	520	XJ	630	XJ	150000 XE	110000 DXJ
Benzo(a)pyrene	21000		12000	D	28	J	130	J	59000	53000 D
Indeno(1,2,3-cd)pyrene	11000		8900	DJ	120	J	140	J	29000	37000 D
Dibenzo(a,h)anthracene	4200	J	3300	DJ	500	U	29	J	9300	12000 DJ
Benzo(g,h,i)perylene	7100		4900	DJ	43	J	52	J	14000	21000 DJ

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TABLE 5-8 (cont.)

1995 SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

Sample ID: MSB-41C	
CHEMICAL	
<u>SEMOVOLATILE ORGANICS</u>	
Phenol	33000 U
2-Chlorophenol	33000 U
1,3-Dichlorobenzene	33000 U
1,4-Dichlorobenzene	33000 U
1,2-Dichlorobenzene	33000 U
2-Methylphenol	33000 U
4-Methylphenol	33000 U
N-Nitroso-di-n-propylamine	33000 U
2,4-Dimethylphenol	33000 U
2,4-Dichlorophenol	33000 U
1,2,4-Trichlorobenzene	33000 U
Naphthalene	180000
4-Chloroaniline	33000 U
2-Methylnaphthalene	49000
Acenaphthylene	8900 J
Acenaphthene	30000 J
2,4-Dinitrophenol	79000 UJ
Dibenzofuran	34000
Fluorene	50000
4-Bromophenyl-phenylether	33000 U
Phenanthrene	110000
Anthracene	29000 J
Carbazole	10000 J
Di-n-butyl phthalate	33000 U
Fluoranthene	66000
Pyrene	59000
Butyl Benzyl phthalate	33000 U
3,3'-Dichlorobenzidine	33000 U
Benzo(a)anthracene	27000 J
Chrysene	22000 J
bis(2-Ethylhexyl)phthalate	33000 U
Di-n-octyl phthalate	33000 U
Benzo(b)fluoranthene	27000 J
Benzo(k)fluoranthene	35000
Benzo(a)pyrene	15000 J
Indeno(1,2,3-cd)pyrene	8500 J
Dibenzo(a,h)anthracene	3400 J
Benzo(g,h,i)perylene	6800 J

TABLE 5-9
1995 SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SB-01A	MSB-01F	MSB-02A	MSB-02J	MSB-02P	MSB-03A	MSB-03G	MSB-04A	MSB-04H	MSB-05A	MSB-05G
A	I	u	m	i	n	u	m				
Antimony	16800	12100	5810	14500	18100	18600	16900	5140	23700	18400	
	0.29 R	0.3 R	0.92 JB	0.31 R	0.34 R	0.31 JB	0.29 R	0.97 JB	0.31 R	0.3 R	
Arsenic	6.5 J	7.5 J	21.6 J	10.8 J	4.6 J	8.4 J	7 J	24.6 J	5.8 J	19.2 J	
Barium	95.1	344	164	56.9	311	86.8	40.6 B	87.6	163	44.3 B	
Beryllium	0.47 B	4.4	0.65 B	0.74 B	4.1	0.69 B	1 B	0.39 B	1.6	0.58 B	
Cadmium	0.2 B	0.78 B	1.2	0.79 B	0.83 B	0.25 B	0.94 B	1.2	0.7 B	0.49 B	
Calcium	879 B	3080	40400	547 B	1800	1980	2850	54400	6870	1210 B	
Chromium	21.6	10.1	20.2	38	12.9	34.8	26.5	35.3	24.9	25.2	
Cobalt	30.4	24.5	6.1 B	8 B	26.7	12.8	3.2 B	8.9 B	7.1 B	10.9 B	
Copper	11 J	24.7 J	169 J	14 J	24.5 J	42.3 J	15.2 J	69.6 J	18.4 J	15.6 J	
Iron	27000 J	30600 J	22500 J	60100 J	40200 J	27900 J	55800 J	37700 J	40900 J	52500 J	
Lead	39.7	29.9	264	35.8	24	37.3	13.4	67.7	14.7	35.4	
Magnesium	613 B	985 B	4400	223 B	1360 B	994 B	650 B	17100	2130	640 B	
Manganese	3210	2240	380	402	2530	256	251	321	467	609	
Mercury	0.15 J	0.13 R	1.1 J	0.13 R	0.13 U	0.19 J	0.14 R	3.4 J	0.2 J	0.1 R	
Nickel	10.2	55.7	14.8	12.8	44.1	10.7	13.1	15.8	24.8	13.1	
Potassium	954 JB	1060 JB	1090 JB	828 JB	1740 J	1070 JB	1160 JB	1690 J	2060 J	2160 J	
Selenium	1.2	0.84 U	2.1	0.86 U	1.3 B	1.3	1.1 B	0.81 U	0.89 U	0.84 U	
Silver	0.36 JB	0.12 U	0.25 B	0.13 U	0.14 U	0.17 B	0.15 B	0.17 B	0.13 U	0.12 U	
Sodium	460	288 B	372 B	386 B	418 B	283 B	417 B	487 B	359 B	415 B	
Thallium	0.73 U	1.7 B	0.7 U	0.76 U	0.84 U	0.7 U	0.73 U	0.72 U	0.78 U	0.74 U	
Vanadium	39.1	15.4	15.7	47.1 J	13.9 B	30.7	30.8	12.9	23.5	36.4	
Zinc	31.5 J	45.7 J	152 J	31.1 J	90.2 J	60 J	31.1 J	125 J	72.1 J	33.4 J	
Cyanide	0.61 U	0.64 U	9	0.66 U	0.72 U	1.9	0.62 U	16.7	0.66 U	0.62 U	

DATA QUALIFIERS

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TABLE 5-9 (cont.)

**1995 SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL	SB-05H	MSB-06A	MSB-06C	MSB-07A	MSB-07H	MSB-08A	MSB-08AD	MSB-08I	MSB-09A	MSB-09B	MSB-09D
A	I	u	m	i	n	u	m				
Antimony	13600	6920	24200	2880	19500	2350	1790	21400	4170	J	12700
	0.3 R	0.69 JB	0.29 R	1.6 JB	0.45 JB	0.59 JB	0.9 JB	0.29	5.6	JB	0.3 R
Arsenic	6.6 J	10.1 J	16.4 J	9.9 J	16.2 J	11.8 J	26.9 J	11.7 J	13.3		5.7
Barium	96.9	115	99.5	82.3	200	139	111	95.6	267		74.1
Beryllium	0.72 B	0.6 B	0.51 B	0.44 B	0.73 B	0.73 B	0.63 B	1.9	0.56 B		0.34 B
Cadmium	0.25 B	0.94 B	0.51 B	0.39 B	0.48 B	0.36 B	0.44 B	0.75	6.3		0.08 U
Calcium	981 B	35500	1690	1510	1340	2390	1650	1090	7760		788 B
Chromium	31.8	42.4	24	236	41.2	39.5	39.6	26.6	43.4	J	16.5 J
Cobalt	18.9	8.6 B	33.9	11.4 B	40.1	7 B	8.7 B	40.3	9.1 B		18
Copper	8.9 J	73 J	13 J	29.5 J	16.9 J	46.3 J	114 J	19.6 J	178		6.2 B
Iron	24300 J	23300 J	33100 J	13900 J	49400 J	17100 J	35300 J	52200 J	29800		21000
Lead	51	99.8	39.2	36.1	28.4	50.6	54.7	22.8	340		25.2
Magnesium	446 B	9730	1040 B	6580	889 B	679 B	399 B	1080 B	1390		410 B
Manganese	1010	364	1310	408	2860	537	713	1540	512 J		588 J
Mercury	0.14 J	3.1 J	0.19 J	0.22 J	0.11 R	0.34 J	0.2 J	0.11 R	2.8		0.12
Nickel	12.2	15.9	11.5	13.4	13.1	17.2	18.2	23	35.7		7 B
Potassium	820 JB	1020 JB	1610 J	528 JB	2370 J	523 JB	437 JB	2950 J	546 B		630 B
Selenium	0.97 B	1.8	0.83 U	1.7	1.3	2.6	2.7	0.82 U	2 J		0.86 J
Silver	0.12 U	0.12 U	0.17 B	0.2 B	0.2 B	0.25 B	0.2 B	0.12 U	0.34 B		0.13 U
Sodium	333 B	388 B	334 B	213 B	728 B	358 B	361 B	332 B	312 B		224 B
Thallium	0.74 U	1.8 U	0.73 U	1.7 U	0.75 U	1 B	0.74 U	0.72 U	0.71 U		0.76 U
Vanadium	34.7	17.9	47.7	11.1 B	39.7	13	10.9 B	32.2	14		33.1
Zinc	25.1 J	128 J	44.6 J	44.3 J	35.8 J	54.5 J	61.4 J	57.3 J	693 J		26.7 J
Cyanide	0.63 U	1.5	0.63 U	1.3	0.63 U	1.0 J	2.8 J	0.63 U	3.7		0.64 U

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TABLE 5-9 (cont.)

**1995 SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL		SB-10A	MSB-10C	MSB-11A	MSB-11G	MSB-12A	MSB-12AD	MSB-12E	MSB-12ED	MSB-13A	MSB-13B	MSB-13D									
		A	I	u	m	i	n	u	m	3230 J	21300 J	3590	21700 J	782 J	4820 J	12500 J	34600 J	2150 J	11600 J		
Antimony		0.27	R	0.3	R	1.9	JB	0.3	R	0.29	R	0.28	R	0.31	R	0.3	R	0.28	R	0.31	R
Arsenic		9.1		8.2		60.7	J	12.3		3.2		6.2		1	JB	7	J	11.3		6.2	
Barium		48.6		129		262		47.3	B	34.8	B	124		126	J	865	J	48.7		71.6	
Beryllium		0.41	B	0.44	B	0.76	B	0.6	B	0.16	B	0.41	B	0.58	B	1.9		0.27	B	0.39	B
Cadmium		0.07	U	0.08	U	3		0.07	U	0.07	U	0.07	U	0.08	U	0.08	U	0.07	U	0.21	U
Calcium		1380		2270		7740		532	B	1390		1870		3750		4350		9260		3100	
Chromium		31.7	J	27	J	45.9		34	J	9.9	J	15.9	J	14.5	J	23.4	J	21.4	J	17.7	J
Cobalt		4.8	B	36.2		15		9.1	B	2.3	B	4.3	B	4	B	113		8	B	8	B
Copper		51.6		9.2		235	J	16.4		14.1	J	28.5	J	7		16.3		46.1		12.2	
Iron		16700		29700		83800	J	45600		5500		13700		25300		40700		26200		24300	
Lead		57.8		53.8		178		20.7		6.4	J	30.5	J	6.8	J	60.4	J	36		43.1	
Magnesium		666	B	1090	B	1870		791	B	147	B	414	B	720	J	3350	J	945	B	477	B
Manganese		71.6	J	3970	J	586		268	J	126	J	162	J	329	J	4940	J	187	J	557	J
Mercury		0.28		0.92		0.63	J	0.11	U	0.11	U	0.13		0.21		0.13	U	0.19		0.12	U
Nickel		12		11.7		44.1		9.7	B	8.1	B	9.3	B	7.4	JB	25.6		12.9		6.1	B
Potassium		759	B	1340		692	JB	1430		207	B	641	B	524	JB	3540	J	444	B	795	B
Selenium		1.5	J	1.2	JB	2.2		0.85	UJ	1.5	J	1.9	J	0.88	UJ	1	JB	2.2	J	0.88	UJ
Silver		0.11	U	0.32	B	0.36	B	0.12	U	0.12	U	0.12	U	0.13	U	0.24	B	0.12	U	0.13	U
Sodium		286	B	340	B	471	B	378	B	275	B	275	B	416	B	482	B	261	B	268	B
Thallium		0.67	U	1.9	B	0.75	U	0.75	U	0.73	U	0.71	U	0.78	U	0.76	U	0.71	U	0.77	U
Vanadium		15.1		44		13.5		41.9		6	B	12.4		21.4		38.3		7.8	B	26	
Zinc		44.1	J	36.2	J	459	J	47.7	J	17.7	J	39.7	J	13	J	39.8	J	80.3	J	68.6	J
Cyanide		1.2		0.62	U	2.4		0.64	U	0.61	U	2.3	J	0.67	U	0.66	U	2		33.1	

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TABLE 5-9 (cont.)

**1995 SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL	SB-13H	MSB-13HD	MSB-14A	MSB-14D	MSB-15A	MSB-15C	MSB-16A	MSB-16C	MSB-17A	MSB-17B	M
A	I	u	m	i	n	u	m	19900 J	13400 J	12600 J	23900 J
Antimony					0.32 R	0.32 R	0.29 R	0.29 R	0.94 JB	0.32 R	0.29 R
Arsenic					16.8	17.4	6.4	11.8	15.4	4.4	4.7
Barium					55.6	47.8 B	45 B	51.6	227	107	47.9 B
Beryllium					1.5	1.6	0.26 B	0.38 B	0.41 B	1.1 B	0.27 B
Cadmium					0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.08 U	0.07 U
Calcium					1520	1340	11100	1090 B	871 B	3000	843 B
Chromium					15.8 J	14.4 J	22 J	30.7 J	18.4 J	27.4 J	9.1 J
Cobalt					4.2 B	8.1 B	8.9 B	5.5 B	5.6 B	8.7 B	2.4 B
Copper					16.1	18	6.8	10.9	50.8	21.1	30.1
Iron					49000	50400	25100	39700	48800	40900	7030
Lead					7.9	10.5	25	18	47.9	10.6	11.5
Magnesium					835 B	467 B	370 B	1040 B	192 B	3290	259 B
Manganese					318 J	564 J	1220 J	323 J	321 J	606 J	50.6 J
Mercury					0.34	0.14	0.1 U	0.12	19.4	0.12 U	0.18
Nickel					14.7 E	12.8	5.7 B	9.2 B	10.7	20.8	7.1 B
Potassium					1800	1110 B	587 B	2350	536 B	5010	557 B
Selenium					0.91 UJ	0.91 UJ	1.2 JB	0.82 UJ	2.4 J	0.91 UJ	2 J
Silver					0.35 U	0.13 U	0.12 U	0.12 U	0.12 U	0.13 U	0.12 U
Sodium					276 B	235 B	242 B	290 B	307 B	495 B	303 B
Thallium					0.8 U	0.8 U	0.73 U	0.72 U	0.73 U	0.8 U	0.72 U
Vanadium					28.8	24.7	34.8	43.1	10.9 B	39.5	5.6 B
Zinc					44.6 J	44.8 J	18.9 J	34.8 J	31 J	46.2 J	20 J
Cyanide					0.67 U	0.66 U	55.8	113	1.1	0.66 U	0.62 U

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TABLE 5-9 (cont.)

**1995 SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL	SB-18A	MSB-18B	MSB-19A	MSB-19E	MSB-20A	MSB-20AD	MSB-20D	MSB-21A	MSB-21B	MSB-22A	MSB-22B
A	l	u	m	i	n	u	m				
Antimony	3630	19300	13900	29800	4710	4320	24600	2980	20600	6740	
	0.27 R	0.31 R	0.29 R	0.32 R	0.59 JB	0.29 R	0.3 R	0.58 JB	0.29 R	0.28 R	
Arsenic	5	22.1	9	13.6	8	7	7.2	12.6	8.1	17.6	
Barium	68.5	80.3	109	640	104	104	60	184	53.5	54.1	
Beryllium	0.32 B	0.76 B	1 B	2.2	0.58 B	0.55 B	0.55 B	0.6 B	0.37 B	0.31 B	
Cadmium	0.07 U	0.08 U	0.07 U	0.08 U	1.6	0.73 B	0.07 U	0.45 B	0.07 U	0.07 U	
Calcium	2740	628 B	6770	2750	5180	6540	1490	2660	1430	459 B	
Chromium	15.4 J	53.5 J	19.6 J	26.7 J	84.9 J	29 J	30 J	10.4 J	23.1 J	14.3 J	
Cobalt	9 B	16.7	11.8 BE	13 B	6.8 B	7 B	5.3 B	9.2 B	16.2	4.1 B	
Copper	46.6	16.4	27.1	10.7	72.5	69.9	7.4	133	11.6	19.3	
Iron	9930	56700	29700	59200	17500	19900	32600	29600	32100	17000	
Lead	32 J	39.9 J	39.3 J	41 J	164 J	153 J	10.1 J	56.8 J	24.2 J	18.6 J	
Magnesium	296 JB	762 JB	1200 J	1640 J	559 JB	1000 JB	1190 JB	298 JB	772 JB	257 JB	
Manganese	549	1280	660	1190	280	317	607	427	882	328	
Mercury	0.86 J	0.12 UJ	0.4 J	0.13 UJ	6.5 J	2.2 J	0.25 J	0.15 J	0.14 J	0.11 U	
Nickel	9.3	26.9	12	12.7	21.6	26.6	6.8 B	18	10	4.8 B	
Potassium	424 JB	2200 J	1550 J	1730 J	710 JB	741 JB	1050 B	463 JB	1140 JB	652 JB	
Selenium	0.93 B	1.1 B	1.2 B	0.91 U	0.91 B	1.8	0.85 U	2.4	1 B	0.78 U	
Silver	0.11 U	0.13 U	0.12 U	0.13 U	0.12 U	0.12 U	0.12 U	0.15 B	0.12 U	0.12 U	
Sodium	256 B	312 B	274 B	372 B	272 B	315 B	339 B	331 B	348 B	269 B	
Thallium	0.67 UJ	0.76 UJ	0.71 UJ	0.8 UJ	0.7 UJ	0.72 UJ	0.75 UJ	0.76 UJ	0.72 UJ	0.69 UJ	
Vanadium	10.1 B	45.1	28.5	57.2	14.7	12.6	49.3	14.4	43.5	17.8	
Zinc	69.6 J	65.8 J	49 J	38.6 J	493 J	259 J	29.8 J	281 J	38.1 J	22.8 J	
Cyanide	2.6 J	0.64 UJ	2.1 J	0.67 UJ	11.9 J	17.3 J	0.63 J	0.67 UJ	0.84 J	0.58 UJ	

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TABLE 5-9 (cont.)

**1995 SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL	SB-22E	MSB-22ED	MSB-23A	MSB-23D	MSB-24A	MSB-24D	MSB-25A	MSB-25D	MSB-26A	MSB-27A
A I u m i n u m	25900	20300	9570	20500	1030	8080	1840	10700	3830	6170 J
Antimony	0.29 R	0.3 R	3.4 JB	0.3 R	0.27 R	0.29 R	0.26 R	0.3 R	0.27 R	0.64 UJ
Arsenic	7	7.4	20	3.7	11.2	26.9	12.8	5.3	9.5	18.6
Barium	138	92.5	176	84.3	79.2	135	50.6	211	79.5	70.8 J
Beryllium	2.3	1.7	1.4	0.52 B	0.66 B	0.4 B	0.65 B	2.5	0.43 B	0.23 JB
Cadmium	0.07 U	0.08 U	3	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.17 B
Calcium	10900 J	3540 J	14100	2410	1480	503 B	1040 B	3810	1080 B	286000 J
Chromium	22.9 J	28.2 J	46.5 J	18.2 J	7.9 J	29.8 J	6.4 J	6.2 J	15.9 J	13.6
Cobalt	3.4 B	5 B	8.2 B	5.8 B	4.3 B	5.8 BE	5.8 B	9.3 B	6 B	5.4 JB
Copper	22	19.7	840	7.6	30.2	12.8	19.8	18	27.3	21.2 J
Iron	34400	38300	37100	24900	15400	55400	8470	22800	13800	6260 J
Lead	10 J	10.5 J	204 J	11.1 J	38.4 J	36.1 J	15.1 J	11.5 J	44.4	47.5
Magnesium	2160 J	1610 J	1520 J	1470 J	235 JB	225 JB	192 JB	1670 J	244 JB	6930 J
Manganese	100	149	904	273	76.2	275	74.2	1420	75.1	378 J
Mercury	0.12 UJ	0.12 UJ	0.75 J	0.12 UJ	0.59 J	0.1 UJ	0.22 J	0.43 J	0.13 J	3.3
Nickel	21.3	19	103	5.7 B	7.1 B	2.5 B	7.8 B	40.3	8.7 B	11.1
Potassium	2420 J	2010 J	1250 J	1570 J	340 JB	510 JB	398 JB	1090 JB	627 JB	957 JB
Selenium	0.81 U	0.85 U	0.83 B	0.84 U	2.1	0.98 B	2	0.85 U	1.9	1.5 UJ
Silver	0.12 U	0.13 U	0.3 B	0.12 U	0.11 U	0.12 U	0.11 U	0.12 U	0.34 B	0.2 R
Sodium	296 B	282 B	1440	443 B	572 B	334 B	300 B	257 B	242 B	404 B
Thallium	0.72 UJ	0.75 UJ	1.6 UJ	0.74 UJ	0.69 UJ	1.3 JB	0.66 UJ	0.93 JB	0.68 UJ	1.9 U
Vanadium	24.8	25.2	24.8	26.6	9 B	33.1	13.7	9.1 B	13.1	21.3 JB
Zinc	37.1 J	36.1 J	612 J	19.1 J	29 J	16.4 J	16.3 J	28.4 J	56.7 J	57
Cyanide	0.64 UJ	0.63 UJ	0.91 J	0.62 U	15.3 J	2.3 J	4.4 J	0.65 U	4.9 J	2.5 J

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TABLE 5-9 (cont.)

**1995 SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL	MSB-27C	MSB-28A	MSB-28F	MSB-28I	MSB-29B	MSB-29H	MSB-30A	MSB-30F	MSB-31A	MSB-31F
A I u m i n u m	18800 J	2280 J	35100 J	26300 J	8960	17400	2630	14600	1340	10300
Antimony	0.48 UJ	1.3 JB	0.61 UJ	0.66 UJ	8.8 R	10.4 R	8.6 R	10.2 R	9.4 R	10 R
Arsenic	4.8	15.2	2.2 B	1.4 B	6.1	16.6	18.8	11.8	9.9	7.1
Barium	226 J	150 J	48.5 JB	63.4 JB	146 J	175 J	50.4 J	128 J	49.7 J	31.9 B
Beryllium	1.6 J	0.61 JB	0.97 JB	1.6 JB	0.78 B	1.9	0.33 B	3.1	0.45 B	0.36 B
Cadmium	0.13 U	0.13 U	0.17 U	0.17 U	0.94 UJ	1.1 UJ	0.92 UJ	1.1 UJ	1 UJ	1.1 UJ
Calcium	2680 J	1040 JB	406 JB	511 JB	1760 J	8050 J	175000 J	4120 J	450 JB	765 JB
Chromium	24.5	207	26.9	12.1	15.7	17.8	11.5	12.6	248	20.2
Cobalt	20.4 J	7.5 JB	5 JB	22.5 J	14.1	10.7 JB	4.6 B	132	9.5 B	11.5 B
Copper	9.3	35.1	26.4	17.2	4.4 B	16.5	54.2	19.5	31.3	9.7
Iron	19400 J	17000 J	52300 J	50800 J	18800 J	38200 J	9240 J	42900 J	16500 J	36900 J
Lead	28	81	24.9	18	22 J	23.7 J	246 J	27 J	55.3 J	29 J
Magnesium	581 JB	2900 J	2310 J	2160 J	179 B	2140	13000	1010 B	2140	235 B
Manganese	6410 J	984 J	163 J	1610 J	3570 J	352 J	299 J	2060 J	285 J	633 J
Mercury	0.13 U	0.14 U	0.17 U	0.14 U	0.11 U	0.17	0.5	0.12 U	0.12	0.12 U
Nickel	12	14.1	14.6 B	23.4	5.2 B	19.4	6.5 B	37.5	10.8	5.2 B
Potassium	987 J	390 JB	4330 J	3280 J	156 B	603 B	787 B	662 B	141 B	524 B
Selenium	2.7 J	3.6 J	1.6 U	1.5 UJ	0.59 R	3.5 R	2 J	3.5 R	0.74 JB	0.68 R
Silver	0.15 R	0.16 R	0.2 R	0.21 R	0.96 UJ	1.1 UJ	0.94 U	1.1 UJ	1 UJ	1.1 UJ
Sodium	396 B	268 B	654 B	600 B	136 B	176 B	235 B	188 B	144 B	743 B
Thallium	1.4 U	1.5 U	1.8 U	1.9 U	0.59 U	0.69 U	0.58 UJ	0.7 UJ	0.62 UJ	0.68 UJ
Vanadium	32.5 J	11.1 JB	36.7 J	20.6 J	24	26.3	7.2 B	25.4	10 B	35.6
Zinc	28.4	49	52.5	62.1	14.2 J	68.5 J	45.3 J	82.8 J	30.5 J	23 J
Cyanide	0.65 UJ	0.73 UJ	0.85 UJ	0.88 UJ	0.55 U	0.64 U	3.3	0.65 U	0.58 U	0.62 U

DATA QUALIFIERS

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a quality control problem identified during the quality assurance review.

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All concentrations in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-9 (cont.)

**1995 SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL		MSB-32A	MSB-33A	MSB-33E	MSB-34A	MSB-34F	MSB-35A	MSB-35B	SB-36A	MSB-36C	MSB-37A	MS
		A	I	u	m	i	n	u	m	J	J	M
Antimony		848	2510	18500	1670	18700	1990	8200	2630	J	22600	J
		8.8 R	11.4 R	10.7 R	10.1 R	10.6 R	10.4 R	9.8 R	1.4 JB	0.49 UJ	0.59 UJ	
Arsenic		7.4	8.2	6.8	8.4	3.2	6.1	6.4	98	8.4	13.3	
Barium		9.4 JB	69.5 J	246 J	30.8 JB	333 J	43.5 JB	24.4 JB	131 J	227 J	224 J	
Beryllium		0.12 B	0.25 B	2.8	0.24 B	2.7	0.32 B	0.33 B	0.86 JB	1.6 J	1.4 JB	
Cadmium		0.94 UJ	1.2 UJ	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ	1 UJ	1.3 B	0.13 U	0.16 U	
Calcium		158000 J	10600 J	5750 J	52600 J	3450 J	6650 J	562 BJ	6100 J	4160 J	5390 J	
Chromium		9.4	926	14.7	10.8	12.1	17.2	25.7	19.3	18.2	29.5	
Cobalt		2.7 U	6.3 B	28.8	3.9 B	112	6.5 B	3.3 B	8.5 JB	15.2 J	27.8 J	
Copper		8.3	20.2	15	14.8	17.1	45.1	4.3 B	70.2	8.4	20.7	
Iron		5620 J	24100 J	41500 J	6860 J	35300 J	20300 J	25500 J	20800 J	26700 J	39200 J	
Lead		10.4 J	18.3 J	20 J	12.7 J	17.3 J	18.2 J	6.3 J	113	22.4	86.9	
Magnesium		58700	16700	2200	19200	1120 B	560 B	194 B	514 JB	1820 J	1740 J	
Manganese		86 J	395 J	4120 J	165 J	5460 J	254 J	117 J	290 J	708 J	2590 J	
Mercury		0.1	0.12 U	0.13 U	0.11 U	0.12 U	0.12 U	0.12 U	0.9	0.14 U	0.16	
Nickel		4 B	13.6	29.8	5.8 B	29.3	11.5	4.2 U	14.8	12.7	11.4 B	
Potassium		231 B	486 B	1060 B	395 B	1330	338 B	389 B	699 JB	1980 J	2140 J	
Selenium		0.58 R	0.72 R	0.7 R	0.67 R	0.7 R	0.69 R	0.66 R	4.4 J	1.2 JB	2.5 J	
Silver		0.96 UJ	1.3 J	1.2 UJ	1.1 UJ	1.2 UJ	1.1 UJ	1.1 UJ	0.16 R	0.16 R	0.19 R	
Sodium		221 B	217 B	244 B	232 B	312 B	220 B	209 B	320 B	382 B	500 B	
Thallium		0.58 UJ	0.72 U	0.7 U	0.67 U	0.7 U	0.69 UJ	0.66 U	1.5 U	1.4 U	1.7 U	
Vanadium		4.6 B	12.7 B	25.3	7.4 B	24.4	9.3 B	30.6	28.8 J	32.9 J	41.8 J	
Zinc		21.3 J	40.3 J	69.9 J	19.9 J	60.6 J	73.5 J	13.2 J	47.8	30.6	75.5	
Cyanide		0.54 U	0.7 U	0.65 U	0.64 U	0.66 U	2.4	0.61 U	3.6 J	0.68 UJ	7.6 J	

DATA QUALIFIERS

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All concentrations in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-9 (cont.)

**1995 SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL	SB-37C	MSB-38A	MSB-38C	MSB-38CD	MSB-39A	MSB-40A	MSB-40B	MSB-41A	MSB-41C	
A	I	u	m	i	n	u	m			
Antimony		28100 J	6740 J	36900 J	32800 J	20200 J	8050 J	16500 J	8490 J	29600 J
		0.6 UJ	1 JB	0.54 UJ	0.59 UJ	0.78 JB	0.77 JB	0.47 UJ	1.1 JB	0.5 U
Arsenic		7.2	8.2	3.3	4.5	16.1	63.9	7.6	34.1	4.9 J
Barium		290 J	396 J	170 J	165 J	274 J	165 J	116 JE	212 J	232 J
Beryllium		2.7 J	0.18 JB	1.5 J	1.8 J	0.67 JB	0.56 JB	0.55 JB	0.6 JB	1.4 J
Cadmium		0.16 U	0.15 U	0.14 U	0.15 U	0.14 U	0.16 U	0.12 U	0.37 B	0.13 U
Calcium		7570 J	5150 J	4130 J	4360 J	10600 J	4220 J	1070 JB	11500 J	3440 J
Chromium		22.4	20.6	29.8	27.6	28.6	26.7	27.1	46.5	29.8 J
Cobalt		11.6 JB	2.7 JB	12.3 JB	16.5 J	6.5 JB	5.9 JB	4.2 JB	7 JB	12 JB
Copper		16.5	44.2	9.1	10.3	61.5	43	11.6	114	8.7 J
Iron		40400 J	7850 J	31800 J	33300 J	34400 J	44400 J	34700 J	34400 J	33400 J
Lead		27	405	20	28.7	215	236	27.5	339	20.9 J
Magnesium		3850 J	758 JB	2850 J	2650 J	2120 J	1390 JB	1050 JB	700 JB	1610 J
Manganese		1250 J	59.9 J	479 J	516 J	267 J	358 J	302 J	191 J	867 J
Mercury		0.17 U	2.4	0.15 U	0.15 U	1.1	0.29	0.11 U	0.88	0.13 U
Nickel		18.6	2.5 B	15.8	13.9	11 B	10.6 B	5.9 B	9.3	12.6 J
Potassium		1680 J	1050 JB	2890 J	2510 J	1990 J	2060 J	1150 JB	1050 JB	1510 J
Selenium		1.4 UJ	1.9 J	1.6 J	1.4 UJ	2.3 J	5 J	1.1 UJ	35.9 J	1.3 JB
Silver		0.19 R	0.24 J	0.17 R	0.19 R	0.17 R	0.19 R	0.15 R	0.14 R	0.16 UJ
Sodium		460 B	344 B	399 B	432 B	440 B	370 B	286 B	253 B	416 JB
Thallium		1.7 U	4.8 U	1.6 U	1.7 U	1.6 U	1.8 U	1.3 U	1.3 U	1.5 U
Vanadium		33.1 J	8.1 JB	39.9 J	41.2 J	35.7 J	32.1 J	47 J	18.7 J	38.9 J
Zinc		36.6	20.2	45.6	40.3	60.9	359	43.4	163	38.1 J
Cyanide		0.85 UJ	77.5 J	4.9 J	1.1 J	25.6 J	67.2 J	4.1 J	21.6 J	0.67 UJ

DATA QUALIFIERS

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All concentrations in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-10
1996 SURFACE SOIL SAMPLING SUMMARY - VOCs/PESTICIDES/PCBs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SS-01	SS-02	SS-02 (dup.)	SS-03	SS-04	SS-05	SS-06
<u>VOLATILE ORGANICS</u>							
1,1,1-TRICHLOROETHANE	NA	NA	NA	NA	NA	NA	NA
<u>PESTICIDES/PCBs</u>							
ALDRIN	10U	10U	10U	11U	10U	10U	12U
ALPHA-BHC	10U	10U	85	20U	10U	30U	300
BETA-BHC	10U	18J	32J	20U	10U	22J	380J
GAMMA-BHC (LINDANE)	10U	10U	10U	11U	10U	10U	49
DELTA-BHC	10U	10U	10U	11U	10U	10U	65N
ENDOSULFAN I (ALPHA)	43J	500J	520J	48J	11JN	69J	230J
DIELDRIN	20U	20U	20U	22U	20U	20U	23U
4,4-DDE (P,P-DDE)	20U	20U	20U	22U	20U	20U	23U
ENDRIN	20U	40U	30U	22U	20U	20U	23U
ENDOSULFAN II (BETA)	20UJ	43J	32J	22UJ	20UJ	20UJ	23UJ
PCB-1254	200U	200U	200U	220U	200U	200U	680U
ENDRIN KETONE	20U	80N	67N	22U	20U	20U	23U

Data Qualifiers:

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J=The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate. The value

UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

NA = Analyte not analyzed for.

Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent above background concentrations

TABLE 5-10 (cont.)

1996 SURFACE SOIL SAMPLING SUMMARY - VOCs/PESTICIDES/PCBs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SS-07	SS-08	SS-09	SS-09 (dup.)	SS-10	SS-11	SS-12	SS-13
<u>VOLATILE ORGANICS</u>								
1,1,1-TRICHLOROETHANE	NA	3J	NA	NA	NA	NA	NA	NA
<u>PESTICIDES/PCBs</u>								
ALDRIN	100U	9.8U	98U	98U	9.2U	9.7U	9.7U	45
ALPHA-BHC	100U	9.8U	98U	98U	9.2U	9.7U	9.7U	5.9JN
BETA-BHC	100U	9.8U	98U	98U	9.2U	9.7U	9.7U	10U
GAMMA-BHC (LINDANE)	100U	9.8U	98U	98U	9.2U	9.7U	9.7U	10U
DELTA-BHC	100U	9.8U	98U	98U	9.2U	9.7U	9.7U	10U
ENDOSULFAN I (ALPHA)	5500J	200J	7800J	6400J	57J	69J	670J	53J
DIELDRIN	130JN	19U	190U	190U	18U	19U	19U	20U
4,4-DDE (P,P-DDE)	190U	19U	190U	190U	18U	19U	19U	20U
ENDRIN	250U	19U	190U	190U	18U	19U	19U	20U
ENDOSULFAN II (BETA)	190UJ	19UJ	190J	190UJ	18UJ	19UJ	60J	110J
PCB-1254	1900U	190U	7000U	6700U	2100	190U	190U	200U
ENDRIN KETONE	550N	46	550U	560U	18U	29	100U	20U

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Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent above background concentrations

TABLE 5-10 (cont.)

1996 SURFACE SOIL SAMPLING SUMMARY - VOCs/PESTICIDES/PCBs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SS-14	SS-15	SS-16	SS-17	SS-18	SS-19	SS-21
<u>VOLATILE ORGANICS</u>							
1,1,1-TRICHLOROETHANE	NA	12U	NA	16U	NA	NA	NA
<u>PESTICIDES/PCBs</u>							
ALDRIN	10U	10U	2.2U	2.7U	100U	11U	10U
ALPHA-BHC	380	490	2.2U	170U	100U	11U	90U
BETA-BHC	180J	10U	2.2U	2.7U	100U	11U	100JN
GAMMA-BHC (LINDANE)	10U	10U	2.2U	2.7U	100U	11U	10U
DELTA-BHC	10U	10U	2.2U	6.0U	100U	11U	10U
ENDOSULFAN I (ALPHA)	300J	10U	2.2U	2.7U	3300J	70J	130JN
DIELDRIN	20U	19U	4.3U	5.2U	190U	21U	20U
4,4-DDE (P,P-DDE)	20U	19U	4.3U	2.1JN	190U	21U	20U
ENDRIN	20U	19U	6.0U	9.0U	240N	21U	20U
ENDOSULFAN II (BETA)	20UJ	19U	4.3U	5.2U	190UJ	16J	20UJ
PCB-1254	700U	190U	43U	52U	1900U	550U	310U
ENDRIN KETONE	90	20	9.0U	31N	190U	21U	42

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Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent above background concentrations

TABLE 5-11
1996 SURFACE SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SS-01	SS-02	SS-02 (dup.)	SS-03	SS-04	SS-05	SS-06	SS-07
<i>SEMICOLVATILE ORGANICS</i>								
NAPHTHALENE	900	8300	7300	2100J	5100	2100	2000J	150000J
ACENAPHTHYLENE	400U	5100	3300J	2200U	2000U	2000U	1900J	75000J
ACENAPHTHENE	400U	4000U	4100U	2200U	2000U	2000U	2300UR	120000UJ
FLUORENE	400U	3000J	1600J	2200U	2000U	5100U	890J	120000UJ
PHENANTHRENE	990	32000	14000	1800J	1400J	2000U	11000J	330000J
ANTHRACENE	400U	8000	3400J	2200UJ	2000U	2000U	2300J	120000J
DI-N-BUTYLPHthalATE	400U	4000U	4100U	2200UJ	2000U	3900	2300UR	120000UJ
FLUORANTHENE	1200	58000	23000	2000J	1600J	2300J	22000J	720000J
PYRENE	990	30000	13000	1200J	1400J	2000UJ	14000J	530000J
BIS(2-ETHYLHEXYL) PHTHALATE	400U	4000U	4100U	2200UJ	2000U	2000UJ	2300UR	120000UJ
BENZO(A)ANTHRACENE	820	28000	14000	1500J	1400J	2000J	13000J	470000J
CHRYSENE	970	28000	14000	1600J	1800J	2200J	13000J	440000J
BENZO(B &/OR K)FLUORANTHENE	2000	59000	24000	3000J	4100J	5000J	17000J	900000J
BENZO-A-PYRENE	420	16000	9600	830J	2000U	1400J	9400J	360000J
INDENO (1,2,3-CD) PYRENE	540	5100J	5700	2200UJ	1000J	1300J	9100J	120000UJ
DIBENZO(A,H)ANTHRACENE	240J	4000U	4100U	2200UJ	2000U	2000UJ	3300UR	120000UJ
BENZO(GHI)PERYLENE	490J	4000UR	3800J	730J	920J	1400J	8800J	120000UJ
PHENOL	400U	4000U	4100U	2200U	2000U	2000U	2300UR	120000UJ
2-METHYLNAPHTHALENE	660J	3300J	2700J	1000J	1700J	2000UJ	2300UR	62000J
DIBENZOFURAN	200J	3600J	2900J	2200U	2000U	2000U	890J	46000J
CARBAZOLE	400U	11000J	2200J	2200UJ	2000U	2000U	1300J	100000J

Data Qualifiers:

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Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent above background concentrations

TABLE 5-11 (cont.)

1996 SURFACE SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SS-08	SS-09	SS-09 (dup.)	SS-10	SS-11	SS-12	SS-13	SS-14
<u>SEMOVOLATILE ORGANICS</u>								
NAPHTHALENE	1400J	280000J	240000J	3300J	2300	120000J	3100	6600
ACENAPHTHYLENE	1900U	150000J	130000J	1800UJ	1900U	20000J	810U	8300
ACENAPHTHENE	1900U	110000UJ	110000UJ	1800UJ	1900U	23000UJ	810U	3900U
FLUORENE	1900U	130000J	140000J	1800UJ	1900U	8500J	810U	14000U
PHENANTHRENE	3200	430000J	320000J	1800J	2500J	24000J	3500	120000
ANTHRACENE	700J	110000J	90000J	1800UJ	1900UJ	23000UJ	270J	19000
DI-N-BUTYLPHthalATE	1900U	110000UJ	110000UJ	1800UJ	1900UJ	23000UJ	810U	3900U
FLUORANTHENE	6000	920000J	440000J	3500J	3300J	19000J	2100	130000
PYRENE	3800J	690000J	440000J	1700J	2300J	24000J	910J	68000
BIS(2-ETHYLHEXYL) PHTHALATE	1900UJ	110000UJ	110000UJ	2000J	1900UJ	23000UJ	810UJ	3900U
BENZO(A)ANTHRACENE	3400J	460000J	230000J	1800J	1800J	14000J	1300J	48000
CHRYSENE	3500J	400000J	250000J	1700J	2100J	16000J	940J	32000
BENZO(B & OR K)FLUORANTHENE	6800J	1100000J	580000J	3700J	3900J	85000J	900J	78000J
BENZO-A-PYRENE	2300J	320000J	180000J	1200J	1000J	19000J	370J	22000
INDENO (1,2,3-CD) PYRENE	1400J	110000UJ	110000UJ	950J	830J	23000UJ	260J	3900U
DIBENZO(A,H)ANTHRACENE	1900UJ	110000UJ	110000UJ	1800UJ	1900UJ	23000UJ	810UJ	3900U
BENZO(GHI)PERYLENE	960J	110000UJ	110000UJ	1100J	880J	23000UJ	810UR	3900UR
PHENOL	1900U	48000J	110000UJ	1800UJ	1900U	23000UJ	810U	3900U
2-METHYLNAPHTHALENE	1600J	120000UJ	100000UJ	1800UJ	1800J	16000J	5500J	5000J
DIBENZOFURAN	600J	89000J	89000J	1800UJ	620J	8500J	860	4500
CARBAZOLE	1900U	99000J	72000J	1800UJ	1900UJ	13000J	810U	21000J

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TABLE 5-11 (cont.)

1996 SURFACE SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SS-15	SS-16	SS-17	SS-18	SS-19	SS-21
<i>SEMIVOLATILE ORGANICS</i>						
NAPHTHALENE	1500	2500	4300	34000J	990	2200J
ACENAPHTHYLENE	750	980	4500	29000J	530J	4100U
ACENAPHTHENE	75J	57J	370J	59000U	850U	4100U
FLUORENE	240J	140J	2200	59000U	290J	1400J
PHENANTHRENE	3100	1800	32000	120000	3400	11000J
ANTHRACENE	1400J	720J	8200J	47000J	1000	3300J
DI-N-BUTYLPHthalATE	390U	420U	1000U	59000U	850U	4100UJ
FLUORANTHENE	6600	4700	68000	250000	4100	25000J
PYRENE	8800	4800	78000	210000	2100	12000J
BIS(2-ETHYLHEXYL) PHTHALATE	390U	420U	1000U	59000U	850U	4100UJ
BENZO(A)ANTHRACENE	5200	3400	46000	180000	3300	11000J
CHRYSENE	5300	420U	46000	160000	2400	8700J
BENZO(B &/OR K)FLUORANTHENE	7500	6300	57000	150000J	2300	13000J
BENZO-A-PYRENE	4800	3000	34000	140000	1900U	5900J
INDENO (1,2,3-CD) PYRENE	1600	1200	7600	62000	850U	2700J
DIBENZO(A,H)ANTHRACENE	480U	450	2200	59000U	850U	4100UJ
BENZO(GHI)PERYLENE	1600	830	6300	34000J	850UR	2000J
PHENOL	390U	420U	1000U	59000U	850U	4100U
2-METHYLNAPHTHALENE	1100	800	1800	59000UJ	570J	4100UJ
DIBENZOFURAN	460	370J	1200	59000U	380J	4100U
CARBAZOLE	550	420U	1800	95000J	1100J	4100UJ

Data Qualifiers:

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UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent above background concentrations

TABLE 5-12
1996 SURFACE SOIL SAMPLING SUMMARY -INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-01	SS-02	SS-02 (dup.)	SS-03	SS-04	SS-05	SS-06
<u>INORGANICS</u>								
SILVER		1.2UJ	1U	1U	1U	1U	1U	0.24U
ARSENIC		17	13	14	7.1	8.4	7.9	4.5
BARIUM		64	86	150	70	67	58	33
BERYLLIUM		0.55J	0.71J	1.1J	0.39J	0.50J	0.44J	0.33J
CADMIUM		0.23U	0.76J	0.59J	0.41J	0.47J	0.25U	0.31J
COBALT		4.9J	25	25	4.7J	5.4J	7.3J	7.8J
CHROMIUM		25J	47	210J	18J	8.4J	45J	58J
COPPER		32	73	50	55	19	21	35
NICKEL		11	72	20	16	9.7	12	10
LEAD		67JN	130	250	46	38	47JN	37
ANTIMONY		2J	2U	2.2J	1U	0.96U	2U	0.94U
SELENIUM		1.2UJ	1.2U	1.2U	1.3U	2.6	1.2UJ	1.2U
VANADIUM		30	28	14	7.2J	8.7J	39	8J
ZINC		43	88	140	120	31	68	69
MERCURY		0.28	0.12U	0.24	0.26	0.24	0.50	1.9
ALUMINUM		7300	2100	2200	2400	1600	18000	2900
MANGANESE		110	490	480	150	47	400	390
CALCIUM		420	650	660	2200	12000	2800	100000
IRON		44000	25000	15000	12000	7000	36400	9400
MAGNESIUM		250	210	180	330	250	1500	33000
SODIUM		120	75	130	110	88	180	280
POTASSIUM		650	260	290	320	260	2500	720
CYANIDE		4.6	6.9	3.5	2.6	0.42U	4.3	0.41U

Data Qualifiers:

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UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

NA = not analyzed

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-12 (cont.)

1996 SURFACE SOIL SAMPLING SUMMARY -INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-07	SS-08	SS-09	SS-09 (dup.)	SS-10	SS-11	SS-12
<u>INORGANICS</u>								
SILVER		1U	0.22U	1U	0.23U	1U	0.23U	0.23U
ARSENIC		13	10	5.3	5.8	7	8.4	15
BARIUM		46	65	38	44	51	66	24
BERYLLIUM		0.51J	0.66J	0.27J	0.30J	0.23J	0.46J	0.23U
CADMIUM		1J	0.22U	0.35J	0.45J	0.41J	0.28J	2.7
COBALT		7.7J	12	3.8J	4.3J	4.6J	6.4J	4.4J
CHROMIUM		51J	14J	140J	180J	20J	13J	14J
COPPER		124	38	57	51	36	45	89
NICKEL		16	13	9U	13	12	16	8.5
LEAD		320JN	41	59	60	35	39	64
ANTIMONY		42	0.90U	1.9J	2J	1.2J	2U	2U
SELENIUM		1.2UJ	1.1U	1.1U	1.1U	1.1U	1.1U	1.1UJ
VANADIUM		8.7J	18	6.4J	7.1J	7.3J	8.7J	5.4J
ZINC		150	58	62	88	110	130	88
MERCURY		2.9	1.2	0.11U	0.42	4.9	0.89	29
ALUMINUM		2500	5900	1700	1900	2600	2300	1300
MANGANESE		190	300	170	200	280	220	170
CALCIUM		82000	38000	150000	120000	170000	45000	150000
IRON		33000	17000	18000	20000	19000	20000	26000
MAGNESIUM		13000	3200	50000	29000	53000	16000	40000
SODIUM		180	170	240	150	370	170	210
POTASSIUM		520	870	690	660	880	610	650
CYANIDE		22	0.5U	5.4	4.9	1.9	0.70	34

Data Qualifiers:

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UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

NA = not analyzed

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-12 (cont.)
1996 SURFACE SOIL SAMPLING SUMMARY -INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-13	SS-14	SS-15	SS-16	SS-17	SS-18	SS-19	SS-21
<u>INORGANICS</u>									
SILVER		3	3U	0.75U	NA	1U	0.23U	0.26U	0.25U
ARSENIC		28	24	6.1J	NA	9.4J	14	8.8	6.2
BARIUM		210	310	58	NA	210	77	90	72
BERYLLIUM		0.34J	0.70J	0.56J	NA	0.68J	0.43J	0.84J	0.42J
CADMIUM		0.25J	0.43J	0.27U	NA	0.33U	0.69J	0.84J	0.39J
COBALT		9.2J	24	10U	NA	8U	9.9J	7.2J	11J
CHROMIUM		19J	20J	56J	NA	17J	88J	30J	19J
COPPER		180	55	54	NA	73	68	61	70
NICKEL		10	60	20	NA	10J	23	18	12
LEAD		360JN	510	140	NA	240	69JN	76	64
ANTIMONY		2.9J	2.1J	2.8UJ	NA	3.3UJ	2.1J	2U	0.99U
SELENIUM		1.2UJ	1.2UJ	1U	NA	1.5J	1.2UJ	1.3UJ	2.8
VANADIUM		25	22	9U	NA	20U	9.6J	13	11J
ZINC		170	99	84	NA	100	150	300	92
MERCURY		0.81	2.1	0.92	NA	0.74	1.7	0.91	1.6
ALUMINUM		4300	3800	2600J	NA	3200J	3700	7100	4000
MANGANESE		71	1700	610J	NA	640J	280	430	270
CALCIUM		470	5100	30000	NA	7100	49000	53000	22000
IRON		38000	3000	13000J	NA	13000J	34000	32000	21000
MAGNESIUM		240	310	5800	NA	940	13000	9500	1400
SODIUM		230	100	230U	NA	100U	170	270	150
POTASSIUM		1000	360	360	NA	530	880	1300	410
CYANIDE		18	22	1.4J	NA	59J	3.5	0.5U	1.2

Data Qualifiers:

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UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

NA = not analyzed

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-13
1996 SURFACE SOIL SAMPLING SUMMARY - DIOXINS/FURANS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-15	SS-15 (dup.)	SS-16	SS-17
DIOXINS/FURANS					
TETRACHLORODIBENZODIOXIN (TOTAL)		31J	26J	54J	48J
1,2,3,7,8 PENTACHLORODIBENZODIOXIN		3.4J	5.6J	5.0J	2.0J
PENTACHLORODIBENZODIOXIN (TOTAL)		22J	18J	18J	21J
1,2,3,4,7,8 HEXACHLORODIBENZODIOXIN		3.9J	4.4J	3.9J	3.8J
1,2,3,6,7,8 HEXACHLORODIBENZODIOXIN		15	21	18	12
1,2,3,7,8,9 HEXACHLORODIBENZODIOXIN		10	16	13	12U
HEXACHLORODIBENZODIOXIN (TOTAL)		160J	210J	140J	210J
1,2,3,4,6,7,8 HEPTACHLORODIBENZODIOXIN		530	860	780	540
HEPTACHLORODIBENZODIOXIN (TOTAL)		1300J	3300J	2900J	2000J
OCTACHLORODIBENZODIOXIN (TOTAL)		4400	7300J	6400J	4800
TETRACHLORODIBENZOFURAN (TOTAL)		68J	79J	69J	91J
1,2,3,7,8 PENTACHLORODIBENZOFURAN		1.9J	3.4J	3.1J	2.3J
2,3,4,7,8 PENTACHLORODIBENZOFURAN		12U	7.5J	6.7J	4.7J
PENTACHLORODIBENZOFURAN (TOTAL)		78J	65J	69J	69J
1,2,3,6,7,8 HEXACHLORODIBENZOFURAN		9.1J	7.8J	6.3J	4.2J
1,2,3,7,8,9 HEXACHLORODIBENZOFURAN		12U	3.5J	12U	12U
2,3,4,6,7,8 HEXACHLORODIBENZOFURAN		5.2J	8.5J	6.0J	2.9J
HEXACHLORODIBENZOFURAN (TOTAL)		180J	98J	100J	60J
1,2,3,4,6,7,8 HEPTACHLORODIBENZOFURAN		220	67	76	42
1,2,3,4,7,8,9 HEPTACHLORODIBENZOFURAN		7.7J	8.2	8.3J	4.1J
HEPTACHLORODIBENZOFURAN (TOTAL)		270J	91J	240J	54J
OCTACHLORODIBENZOFURAN (TOTAL)		520	220	240	100
TEQ (TOXIC. EQUIV. VALUE, FROM I-TEF/89)		19J	30J	26J	16J

Data Qualifiers:

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Concentrations presented in ng/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-14

1996 SUBSURFACE SOIL SAMPLING SUMMARY -VOCs/PESTICIDES/PCBs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SB-01-05	SB-02-05	SB-02-10	SB-02-15	SB-03-05	SB-04-02
<u>VOLATILE ORGANICS</u>							
BENZENE		12U	13U	12U	14U	12U	15U
TOLUENE		12U	13U	12U	14U	12U	15U
CHLOROBENZENE		12UR	13UR	12UR	14UR	12UR	15UR
ETHYL BENZENE		12U	13U	12U	14U	12U	15U
TOTAL XYLEMES		12UJ	13UJ	12UJ	14UJ	12UJ	15UJ
ACETONE		140	24N	26N	14U	12U	15U
CARBON DISULFIDE		12U	13U	12U	14U	12U	15U
METHYL ETHYL KETONE		12U	13U	12U	14U	12U	15U
STYRENE		12U	13U	12U	14U	12U	15U
<u>PESTICIDES/PCBs</u>							
HEPTACHLOR		2.1U	2.2U	2.1U	2.4U	2.1U	2.5U
ALPHA-BHC		2.1U	2.2U	2.1U	2.4U	2.1U	2.5U
BETA-BHC		2.1U	2.2U	2.1U	2.4U	2.1U	2.5U
GAMMA-BHC (LINDANE)		2.1U	2.2U	2.1U	2.4U	2.1U	2.5U
DELTA-BHC		2.1U	2.2U	2.1U	2.4U	2.1U	2.5U
ENDOSULFAN I (ALPHA)		2.1U	2.2U	2.1U	2.4U	2.1U	2.5U
ALPHA-CHLORDANE		2.1U	2.2U	2.1U	2.4U	2.1U	2.5U
METHOXYCHLOR		21U	22U	21U	24U	21U	25U
ENDRIN KETONE		4.1U	4.2U	4.1U	4.6U	4.1U	4.9U

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R = QC indicates that data are unusable. Chemical may or may not be present

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

NA = The chemical was not analyzed for.

Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background

TABLE 5-14 (cont.)

1996 SUBSURFACE SOIL SAMPLING SUMMARY -VOCs/PESTICIDES/PCBs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SB-04-05	SB-04-10	SB-04-15	SB-05-05	SB-06-19	SB-07-05
<u>VOLATILE ORGANICS</u>							
BENZENE		13U	12U	13U	39	14U	10U
TOLUENE		3J	12U	13U	33	14U	10U
CHLOROBENZENE		13UR	12UR	13UR	13U	5J	10U
ETHYL BENZENE		6J	12U	13U	13U	14U	10U
TOTAL XYLEMES		12J	12UJ	13UJ	20	14U	10U
ACETONE		13U	26N	17N	13U	27NJ	14NJ
CARBON DISULFIDE		13U	12U	13U	13U	14U	10U
METHYL ETHYL KETONE		13U	12U	13U	13U	14U	10U
STYRENE		13U	12U	13U	13U	14U	10U
<u>PESTICIDES/PCBs</u>							
HEPTACHLOR		2.3U	2.0U	2.2U	20U	2.4U	1.3JN
ALPHA-BHC		2.3U	2.0U	2.2U	60U	6.6	1.7U
BETA-BHC		2.3U	2.0U	2.2U	20U	11	1.7U
GAMMA-BHC (LINDANE)		2.3U	2.0U	2.2U	20U	9.0	1.7U
DELTA-BHC		2.3U	2.0U	2.2U	20U	14	1.7U
ENDOSULFAN I (ALPHA)		2.3U	2.0U	2.2U	260J	11J	1.7UR
ALPHA-CHLORDANE		2.3U	2.0U	2.2U	250N	2.4U	1.7U
METHOXYCHLOR		23U	3.3J	22U	200U	24U	17U
ENDRIN KETONE		21	4.0U	4.2U	40U	4.7U	3.3U

Data Qualifiers:

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Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background above background

TABLE 5-14 (cont.)

1996 SUBSURFACE SOIL SAMPLING SUMMARY -VOCs/PESTICIDES/PCBs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SB-08-05	SB-09-05	SB-10-05	SB-10-05	SB-11-05	SB-12-05
<u>VOLATILE ORGANICS</u>							
BENZENE		830	5J	14U	15	160	NA
TOLUENE		1100	5J	14U	16	270	NA
CHLOROBENZENE		13U	13U	14U	6J	14U	NA
ETHYL BENZENE		22	13U	14U	13U	90	NA
TOTAL XYLEMES		2000	80	10J	150	230	NA
ACETONE		14N	13U	150J	520J	46J	NA
CARBON DISULFIDE		13U	13U	14U	8J	14U	NA
METHYL ETHYL KETONE		13U	28J	14U	35J	14U	NA
STYRENE		13U	13U	14U	13U	57	NA
<u>PESTICIDES/PCBs</u>							
HEPTACHLOR		100U	11U	11U	11U	11U	12U
ALPHA-BHC		100U	11U	11U	11U	11U	12U
BETA-BHC		100U	11U	11U	11U	11U	12U
GAMMA-BHC (LINDANE)		100U	11U	11U	11U	11U	12U
DELTA-BHC		100U	11U	11U	11U	11U	12U
ENDOSULFAN I (ALPHA)		1200J	11UR	11J	11UR	11UR	12UR
ALPHA-CHLORDANE		100U	32	11U	11U	11U	12U
METHOXYCHLOR		1000U	110U	110U	110U	110U	120U
ENDRIN KETONE		200U	21U	22U	22U	21U	23U

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Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background

TABLE 5-15
1996 SUBSURFACE SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SB-01-05	SB-02-05	SB-02-10	SB-02-15	SB-03-05	SB-04-02
<u>SEMIVOLATILE ORGANICS</u>						
NAPHTHALENE	110J	420U	410U	460U	400U	3700
HEXACHLOROCYCLOPENTADIENE	410UR	420UR	410UR	460UR	400UR	490UR
ACENAPHTHYLENE	410U	420U	410U	460U	400U	490U
ACENAPHTHENE	410U	420U	410U	460U	400U	600
FLUORENE	410U	420U	410U	460U	400U	740
PHENANTHRENE	70J	420U	410U	460U	400U	2600
ANTHRACENE	410UR	420UR	410UR	460UR	400UR	130J
FLUORANTHENE	100J	420U	410U	460U	400U	880
PYRENE	110J	420U	410U	460U	400U	680
BENZO(A)ANTHRACENE	90J	420U	410U	460U	400U	490U
CHRYSENE	100J	420U	410U	460U	400U	490U
BENZO(B & OR K)FLUORANTHENE	110J	420U	410U	460U	400U	60J
BENZO-A-PYRENE	52J	420U	410U	460U	400U	490U
INDENO (1,2,3-CD) PYRENE	45J	420U	410U	460U	400U	490U
DIBENZO(A,H)ANTHRACENE	410U	420U	410U	460U	400U	490U
BENZO(GHI)PERYLENE	410U	420U	410U	460U	400U	490U
PHENOL	410U	420U	410U	460U	400U	490U
2,4-DIMETHYLPHENOL	410U	420U	410U	460U	400U	490U
2-METHYLNAPHTHALENE	66J	420U	410U	460U	400U	260J
DIBENZOFURAN	410U	420U	410U	460U	400U	600
2-METHYLPHENOL	410U	420U	410U	460U	400U	490U
(3- AND/OR 4-)METHYLPHENOL	410U	420U	410U	460U	400U	490U
CARBAZOLE	410U	420U	410U	460U	400U	490U

Data Qualifiers:

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Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-15 (cont)

1996 SUBSURFACE SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SB-04-05	SB-04-10	SB-04-15	SB-05-05	SB-06-19	SB-07-05
<u>SEMIVOLATILE ORGANICS</u>						
NAPHTHALENE	23000	64J	2000	2000000	190J	330U
HEXACHLOROCYCLOPENTADIENE	440UR	390UR	420UR	67000UR	470UR	330UR
ACENAPHTHYLENE	440U	390U	420U	180000	470UR	330U
ACENAPHTHENE	8500	390U	1300	83000	470UR	330U
FLUORENE	7400	390U	1200	390000	470UR	330U
PHENANTHRENE	32000	78J	6400	1300000	310J	330U
ANTHRACENE	2800J	390UR	740J	340000	470UR	330U
FLUORANTHENE	25000	310J	5900	1200000	710J	330U
PYRENE	23000	180J	5200	790000	520J	330U
BENZO(A)ANTHRACENE	7700	45J	1600	350000	430J	330U
CHRYSENE	2200	46J	860	330000	460J	330U
BENZO(B &/OR K)FLUORANTHENE	7400	41J	1800	510000	890J	330U
BENZO-A-PYRENE	2500	390U	990	230000	260J	330U
INDENO (1,2,3-CD) PYRENE	1300	390U	350J	130000	250J	330U
DIBENZO(A,H)ANTHRACENE	250J	390U	80J	50000J	470UR	330U
BENZO(GHI)PERYLENE	1100	390U	290J	61000J	470UR	330UR
PHENOL	440U	390U	420U	67000U	470UR	330U
2,4-DIMETHYLPHENOL	440U	390U	420U	67000U	470UR	330U
2-METHYLNAPHTHALENE	4400	390U	560	440000J	470UR	330UJ
DIBENZOFURAN	4900	87J	1100	260000	470UR	330U
2-METHYLPHENOL	440U	390U	420U	67000U	470UR	330U
(3- AND/OR 4-)METHYLPHENOL	440U	390U	420U	67000UR	470UR	330UR
CARBAZOLE	660	390U	160J	380000J	470UR	330U

Data Qualifiers:

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J=The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate. The value
The value preceding the "J" is the estimated value.

JJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

R = QC indicates that the data are unusable. Chemical may or may not present.

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Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-15 (cont)

1996 SUBSURFACE SOIL SAMPLING SUMMARY - SVOCs
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SB-08-05	SB-09-05	SB-10-05	SB-10-05	SB-11-05	SB-12-05
<u>SEMIVOLATILE ORGANICS</u>						
NAPHTHALENE	48000J	3900000J	3600J	3000	7600	77000
HEXACHLOROCYCLOPENTADIENE	1200UR	990000J	2200UR	450UR	2100UR	2300UR
ACENAPHTHYLENE	7100J	140000J	2200UJ	450U	2100U	2800
ACENAPHTHENE	12000UJ	320000UJ	8700J	1200	2100U	1900J
FLUORENE	10000J	650000J	2500UJ	450U	2100U	3400U
PHENANTHRENE	37000J	1800000J	2200UJ	3600U	750J	1500J
ANTHRACENE	8000J	360000J	3500UJ	950U	2100U	2300U
FLUORANTHENE	49000J	1300000J	2200UJ	8500	1500J	1800J
PYRENE	41000J	760000J	2200UJ	3400	1300J	1800J
BENZO(A)ANTHRACENE	40000J	460000J	3100J	3600	850J	740J
CHRYSENE	31000J	400000J	2600J	1500	650J	2300U
BENZO(B & OR K)FLUORANTHENE	97000J	740000J	3600J	4000	2100U	2300U
BENZO-A-PYRENE	29000J	280000J	1500J	1700	2100U	2300U
INDENO (1,2,3-CD) PYRENE	12000UJ	320000UJ	2200UJ	1100	2100U	2300U
DIBENZO(A,H)ANTHRACENE	12000UJ	320000UJ	2200UJ	600	2100U	2300U
BENZO(GHI)PERYLENE	12000UJ	320000UJ	2200UJ	1200J	2100UR	2300UR
PHENOL	12000UJ	320000UJ	2200UJ	450U	2100U	2700
2,4-DIMETHYLPHENOL	12000UJ	320000UJ	2200UJ	230J	2100U	2300U
2-METHYLNAPHTHALENE	12000J	320000UJ	2200UJ	210J	2100UJ	12000J
DIBENZOFURAN	8800J	420000J	1800J	1800J	2100U	2100J
2-METHYLPHENOL	12000UJ	320000UJ	2200UJ	150J	2100U	2300U
(3- AND/OR 4-)METHYLPHENOL	12000UJ	320000UR	2200UR	190J	2100UR	2300UR
CARBAZOLE	12000J	800000J	2200UJ	450U	2100U	2300U

Data Qualifiers:

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Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-16
1996 SUBSURFACE SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SB-01-05	SB-02-05	SB-02-10	SB-02-15	SB-03-05	SB-04-02
<u>INORGANICS</u>							
ARSENIC		27J	14J	7.4J	7.9J	13J	39J
BARIUM		62	31	330	150	48	73
BERYLLIUM		1U	1.2J	5.2	2	1U	0.23U
CADMIUM		0.30U	0.30U	0.30U	0.32U	0.28U	1.6
COBALT		3U	6U	42	20U	5U	0.71U
CHROMIUM		20J	17J	9J	19J	24	2.4J
COPPER		24	14	17	14	11	7U
NICKEL		3.4J	9.4J	64	21	5.4J	1U
LEAD		130JN	18JN	17JN	15	8.4JN	91
ANTIMONY		4UJ	3UJ	4UJ	3.3UJ	2.9UR	3.5UJ
SELENIUM		1.3J	1UJ	1UJ	1UJ	0.50UJ	4.3
THALLIUM		0.55U	0.55U	0.54U	0.60U	0.62	0.63U
VANADIUM		31	27	15	22	33	2U
ZINC		30U	40U	64	72	30U	40
MERCURY		0.2U	0.06U	0.06U	0.17	0.12	1.5
ALUMINUM		7400J	15000J	15000J	23000J	14000	920J
MANGANESE		220J	200J	6000J	1300J	310	9.6J
CALCIUM		1100U	780U	4400	7500	1000J	120000
IRON		36000J	49000J	41000J	42000J	38000	2500J
MAGNESIUM		340	560	1100	2300	440	130U
SODIUM		150U	50U	100U	110U	60U	160U
POTASSIUM		570	860	910	1600	770	630
CYANIDE		13J	0.07UJ	0.07UJ	0.07UJ	0.07U	0.08UJ

Data Qualifiers:

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Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-16 (cont.)

**1996 SUBSURFACE SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL	Sample ID:	SB-04-05	SB-04-10	SB-04-15	SB-05-05	SB-06-19	SB-07-05
<u>INORGANICS</u>							
ARSENIC		21J	5.8J	17J	22	14	9
BARIUM		47	130	130	190	110	150
BERYLLIUM		0.23J	2.2	0.84J	0.87J	1.6	1.6
CADMIUM		1.5	0.28U	1U	0.54J	0.29U	0.28U
COBALT		2U	10U	3U	8.8J	12J	7.7J
CHROMIUM		9J	21	10	24J	34J	16J
COPPER		8.9	27	22	33	23	17
NICKEL		2U	19	7.4J	9U	35	19
LEAD		64	26JN	390J	120	120	14
ANTIMONY		3UJ	4UJ	3UR	2U	3U	1.5J
SELENIUM		2.4	0.49UJ	1.6J	1.3U	1.4U	1.4U
THALLIUM		0.54U	0.51U	0.55U	2.1U	2.3U	2.2U
VANADIUM		13	28	20U	26	29	20
ZINC		23	57	40U	190J	300J	73J
MERCURY		0.25	0.2U	0.2U	0.43	0.40	0.14U
ALUMINUM		6700J	22000	6700	11000	19000	19000
MANGANESE		67J	470	77	250	710	990
CALCIUM		84000	39000J	65000J	2200	6200	76000
IRON		11000J	38000	14000	21000	50000	40000
MAGNESIUM		430	4200	1100	1600	2400	2000
SODIUM		360	460	150U	170	400	290
POTASSIUM		600	1700	680	800	1600	1300
CYANIDE		0.07UJ	0.07U	0.07U	0.47U	0.50U	0.49U

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Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-16 (cont.)
1996 SUBSURFACE SOIL SAMPLING SUMMARY - INORGANICS
COKE PLANT AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SB-08-05	SB-09-05	SB-10-05	SB-10-05 (dup.)	SB-11-05	SB-12-05
<u>INORGANICS</u>							
ARSENIC		11	25	14	11	8.4	12
BARIUM		61	34	100	56	90	93
BERYLLIUM		0.65J	0.48	0.78J	0.51J	0.58J	0.58J
CADMIUM		0.24U	0.26U	0.28U	0.37J	0.25U	0.27U
COBALT		7.3J	6.7J	6.2J	18	21	15
CHROMIUM		22J	56J	32J	19J	27J	28
COPPER		26	15	21	20	17	9.4
NICKEL		12	8U	13	11	13	10U
LEAD		35	2JN	27JN	39	22	23
ANTIMONY		0.98U	2.8J	2.2J	1U	2U	1.6J
SELENIUM		1.2U	1.3UJ	1.4UJ	1.3U	1.3UJ	1.3UJ
THALLIUM		2U	2.1UJ	2.3UJ	2U	2UJ	2.1UJ
VANADIUM		25	45	42	25	49	34
ZINC		47	38	57	140	66	39
MERCURY		0.39	0.13U	0.28	0.13U	0.76	0.59
ALUMINUM		10000	15000	19000	8400	27000	16000
MANGANESE		450	450	420	2600	3200	2800
CALCIUM		37000	1700	13000	65000	2000	6200
IRON		26000	75000	61000	24000	44000	37000
MAGNESIUM		3300	420	3600	24000	1000	770
SODIUM		150	78	310	350	390	95
POTASSIUM		1100	760	1300	640	1500	600
CYANIDE		0.43U	0.45U	0.49U	0.5U	0.44U	0.47U

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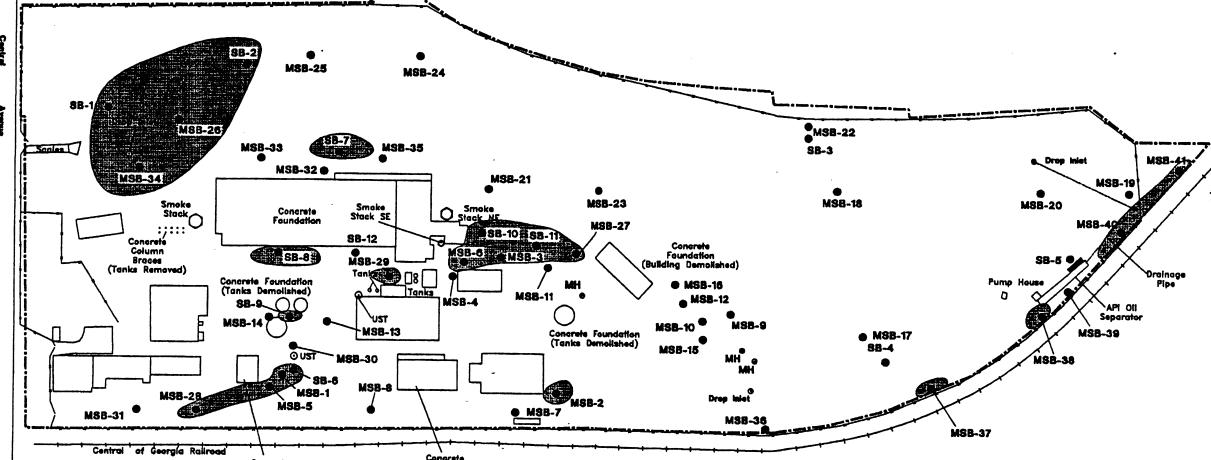
code. These codes and their corresponding depths are listed below:

CODE	DEPTH (ft)	CODE	DEPTH (ft)	CODE	DEPTH (ft)
A	0-2	G	12-14	M	24-26
B	2-4	H	14-16	N	26-28
C	4-6	I	16-18	O	28-30
D	6-8	J	18-20	P	30-32
E	8-10	K	20-22		
F	10-12	L	22-24		

There are two significant differences between the RI and Mead analytical programs. First, surface soil samples collected during the RI were collected from 0 to 6 inches below ground surface, and only 10% of these samples were analyzed for VOCs because VOCs would not be expected at such shallow depths (10% were analyzed for VOCs as confirmation). The shallow samples collected during Mead's study are from a depth of 0 to 2 feet, and all samples were analyzed for VOCs. Secondly, no samples in the Mead study were analyzed for pesticides/PCBs. In this RI report, the 0 to 2 foot samples from the Mead study will be considered as surface soil samples.

Chlorinated VOCs (methylene chloride, chloroform, carbon tetrachloride, and tetrachloroethene), ketones (methyl ethyl ketone and acetone), and aromatic hydrocarbons (benzene, toluene, ethylbenzene, total xylenes, styrene, and chlorobenzene) were all detected in the coke plant soils.

Figure 5-11 shows the estimated extent of non-aromatic VOC contamination and **Figure 5-12** shows the estimated extent of aromatic VOC contamination in soils from 0 to 6 feet. This depth



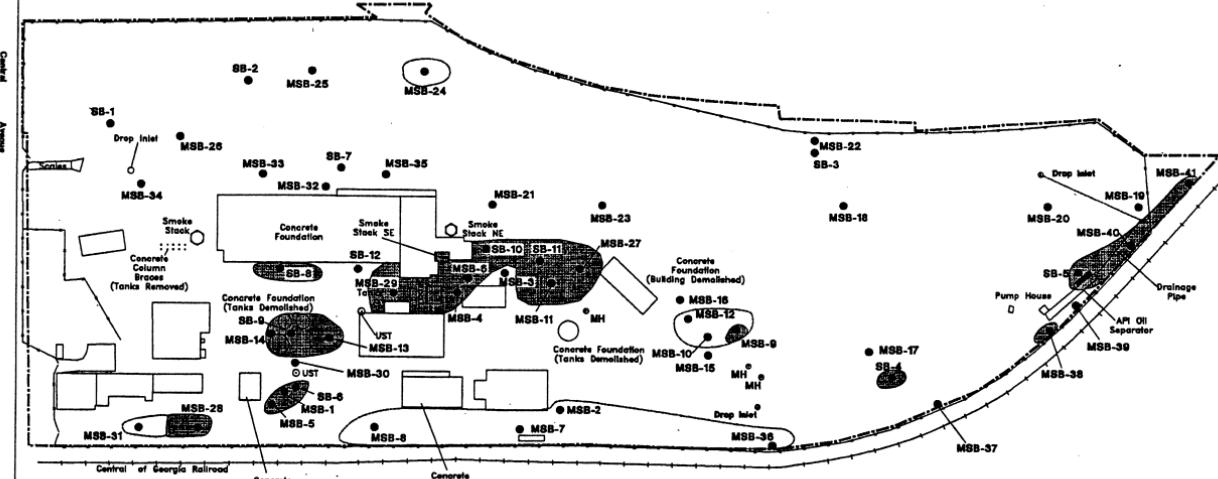
LEGEND

- MH ○ Manholes/Drain Inlets
 - Underground Storage Tank
 - Area of VOC Non-Aromatic Contamination > 10 ug/Kg
 - SB-4 ● Soil Boring Sample - RI/FS
 - MSB-9 ● Soil Boring - Mead
 - Coke Plant Boundary
 - Railroad
 - Fence
- 80 0 80 160
SCALE IN FEET

ESTIMATED EXTENT OF NON-AROMATIC VOC SOIL (0'-6') CONTAMINATION - COKE PLANT

Tennessee Products Site
Chattanooga, Tennessee

W. 47th St

**LEGEND**

- MH ● Manholes/Drop Inlets
 - Underground Storage Tank
 - SB-4 ● Soil Boring Sample - RI/FS
 - MSS-9 ● Soil Boring - Mead
 - Coke Plant Boundary
 - Railroad
 - Fence
- | | |
|-----------|---|
| ■ | Area of Aromatic VOC Contamination > 10 ug/Kg |
| (Outline) | Area of Aromatic VOC Contamination < 10 ug/Kg |
- 80 0 80 160
SCALE IN FEET

ESTIMATED EXTENT OF AROMATIC VOC SOIL (0-6') CONTAMINATION - COKE PLANT

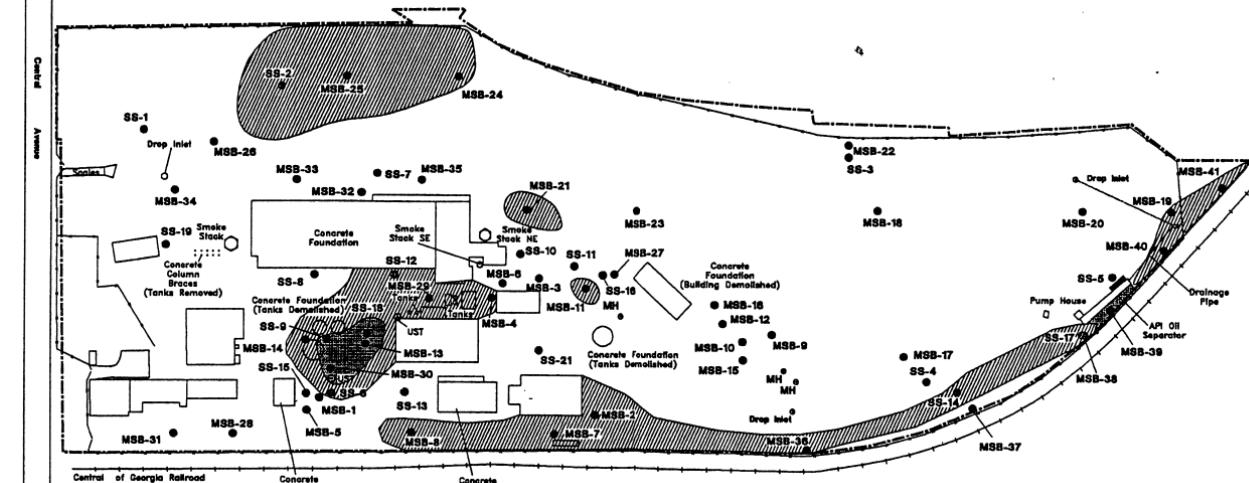
Tennessee Products Site
Chattanooga, Tennessee

FIGURE No. 5-12

interval was selected for evaluation primarily because of the availability of data and the presence of groundwater below this depth. Due to the relatively high solubility of VOCs, soil samples collected within the saturated zone will reflect the VOC contamination in groundwater.

Both aromatic hydrocarbons and non-aromatic VOCs are found in soils near the coke ovens, storage tanks (manufacturing area), and along the south fenceline in the northeast end of the coke plant. With the exception of the former coke and coal storage area, the aromatic hydrocarbons were detected in samples from a wider area. In the former coke and coal storage area along the north side of the plant, the only aromatic VOC detected was toluene in MSB-24 (3 ug/kg). Acetone was detected in several samples ranging in concentration from 17 ug/kg to 140 ug/kg (in SB-01-05). In two areas of the coke plant, the total concentration of aromatic VOCs is less than 10 ug/kg. One is along the south property fence (MSB-8, MSB-7, MSB-2, and MSB-36). In a duplicate sample of MSB-8, the concentration is 10.2 ug/kg, and in a replicate sample of MSB-36 the concentration is 10.2 ug/kg. The other area of relatively low aromatic VOC contamination is the central part of the coke plant (MSB-10 and MSB-12). In an associated boring in the central part of the coke plant (MSB-9), the concentration is greater than 10 ug/kg. The greatest concentration of total aromatic hydrocarbons was found in the 0 - 2 feet sample from boring MSB-41, collected from the ditch located in the northeast end of the coke plant. This sample contained 8700 ug/kg benzene, 850 ug/kg toluene, 660 ug/kg ethylbenzene, and 5100 ug/kg total xylenes. Other areas of relatively higher concentrations of aromatic VOCs include SB-8, located adjacent to the south edge of the coke ovens (830 ug/kg benzene, 1100 ug/kg toluene, 2000 ug/kg total xylenes, and 22 ug/kg ethylbenzene). Sample SB-10-05 contained the highest concentration of non-aromatic VOCs (520 ug/kg acetone, 8 ug/kg carbon disulfide, and 35 ug/kg methyl ethyl ketone). PAHs were detected at concentrations above background criteria in all surface soil samples collected. **Figure 5-13** depicts the estimated area where total concentration of PAHs in surface soil exceeds 100 mg/kg and 1000 mg/kg. Areas of PAH contamination at concentrations between 100 and 1000 mg/kg include the coke and coal storage area (SS-2, MSB-25 and MSB-24) the manufacturing area south of the coke ovens, and all but the western end of the south side of the coke plant, including the drainage ditch. Areas of PAH surface soil contamination at

W. 47th SL

**LEGEND**

- | | |
|-------|--------------------------|
| MH | Manholes/Drop Inlets |
| ○ | Underground Storage Tank |
| SS-13 | Surface Soil Samples |
| MSB-9 | Soil Boring - Head |
| — | Coke Plant Boundary |
| — | Railroad |
| — | Fence |
- > 1000 mg/Kg Total PAH
 ■ 100-1000 mg/Kg Total PAH
 □ 0-100 mg/Kg Total PAH
- SCALE IN FEET

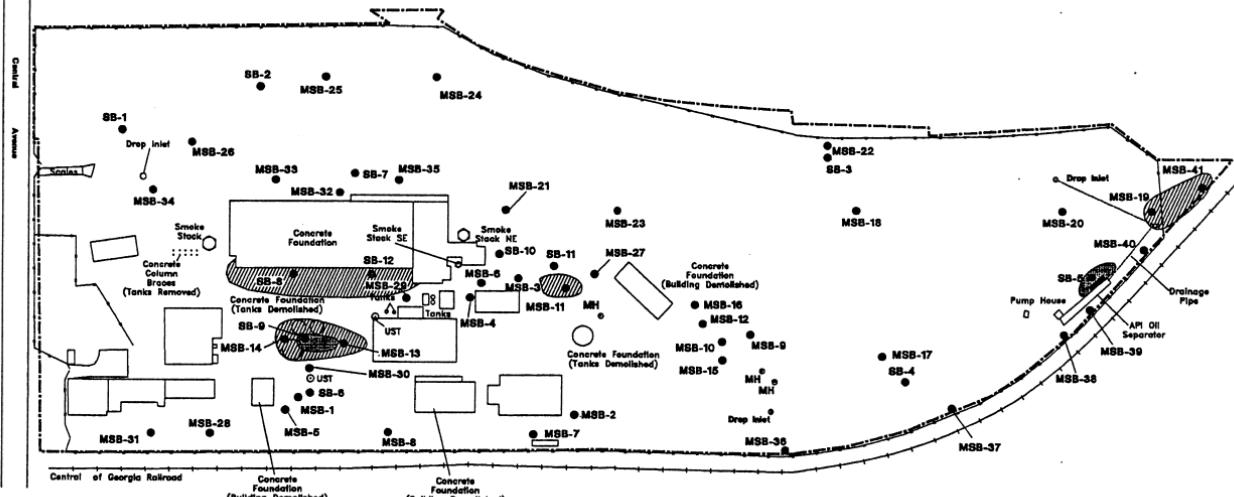
ESTIMATED EXTENT OF PAH CONTAMINATION IN SURFACE SOIL (0-2') - COKE PLANT

Tennessee Products Site
Chattanooga, Tennessee

concentrations greater than 1000 mg/kg include the storage tank area south of the coke ovens (SS-9, SS-18, MSB-13-A, MSB-30-A), and two samples (MSB-39-A, and MSB-40-A) collected from the drainage ditch along the south side of the coke plant. **Figure 5-14** depicts the estimated extent of subsurface PAH contamination at depths from approximately 2 feet to 6 feet below ground surface. In both studies, sampling below a depth of 6 feet was limited. During the RI, samples were not collected below the water table which was often encountered within 5 feet of the 5 to 6.5 feet sample. During the Mead study, samples were collected only if there was an indication of contamination, and contamination usually decreases with depth. However, at some locations, samples were collected both from depths shallower and deeper than 6 feet. At other locations, soil samples were only collected at depths greater than 6 feet. Because of the limited data, those areas where contamination was detected at depths greater than 6 feet are not shown in a figure, but will be noted in the discussion below.

Areas of the coke plant where total PAH contamination appears to be limited to the upper 2 feet of soil include the former coke and coal storage area, and the ditch that runs along the southern part of the coke plant (except MSB-41, see below). In the former coke and coal storage areas, the concentration of total PAH in samples from below 2 feet ranged from 0 mg/kg to 0.853 mg/kg at SB-1. As shown in Figure 5-12, areas where PAH contamination is present at concentrations greater than 1000 mg/kg include SB-5 (the oil water separator) and the area of the former above ground storage tanks (SB-9, MSB-13). Total PAH contamination at concentrations greater than 100 mg/kg but less than 1000 mg/kg include the former above ground tanks (MSB-14), the area immediately south of the coke ovens (SB-8, SB-12), the area around SB-4, and the area east of the coke ovens, immediately around boring MSB-11. Note that no data from the 2 to 6 feet zone are available for soil boring MSB-11, but elevated concentrations of PAHs above 100 mg/kg were detected in surface soil and at depths greater than 6 feet. At location MSB-19, it appears that contamination increases with depth. A shallow sample (0 to 2 feet) contained 128 mg/kg total PAHs while a sample from a depth of 8 to 10 feet contained 225 mg/kg total PAH. This may indicate elevated concentrations within the 2 to 6 feet zone, although no sample from that zone was collected.

W. 47th St



LEGEND

- MH (circle) Manholes/Drop Inlets
 - (circle) Underground Storage Tank
 - SB-13 (solid circle) Soil Boring Samples RI/FS
 - MSB-9 (solid circle) Soil Boring - Mead
 - Coke Plant Boundary
 - Railroad
 - Fence
- Shaded areas indicate estimated extent of PAH contamination:
- > 1000 mg/Kg Total PAH
 - 100-1000 mg/Kg Total PAH
 - 0-100 mg/Kg Total PAH

ESTIMATED EXTENT OF PAH CONTAMINATION IN SUBSURFACE (2-6') SOIL - COKE PLANT

Tennessee Products Site
Chattanooga, Tennessee

Significant total PAH contamination at depths greater than 6 feet were detected at MSB-11 (223 mg/kg from 12 to 14 feet) south of the coke ovens, MSB-14 (1027 mg/kg from 6 to 8 feet) and MSB-13 (163 mg/kg from the 14 to 16 feet) around the former storage tanks, and as mentioned above, MSB-19 (225 mg/kg from 8 to 10 feet). It should be noted that, due to the shallow water table, no samples below a depth of 6 feet were collected south of the coke ovens (SB-8 and SB-12). Along the central part of the southern boundary of the coke plant, three samples with relatively high concentrations of PAH were collected at depths greater than 14 feet. At MSB-7, a sample from 14 to 16 feet contained 60 mg/kg total PAHs; at MSB-2, a sample from 18 to 20 feet contained 36 mg/kg, while the deepest sample (30 to 32 feet) contained 70 mg/kg total PAHs.

Pesticides were detected in all but one (SS-16) RI surface soil sample. The pesticides detected include aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, endosulfan I, dieldrin, 4,4-DDE, endrin, endosulfan II, and endrin ketone. Endosulfan I was the most commonly detected pesticide and was found in 17 of 20 samples at concentrations ranging from 11 ug/kg in SS-4 to 7800 ug/kg in SS-9. Sample SS-14, collected along the south side of the coke plant, contained the greatest number of pesticides: alpha-BHC (380 ug/kg), beta-BHC (180 ug/kg), endosulfan I (300 ug/kg), and endrin ketone (90 ug/kg). There is no apparent pattern to the distribution of pesticides in surface soil.

A slightly different suite of pesticides was detected in subsurface soil samples: heptachlor, alpha-BHC, beta-BHC, gamma-BHC Delta-BHC, endosulfan I, alpha-chlordane, methoxychlor, and endrin ketone. Pesticides were detected in subsurface soil samples from the following borings: SB-4 (endrin ketone, 21 ug/kg; methoxychlor, 3.3 ug/kg), SB-5 (endosulfan I, 260 ug/kg and alpha-chlordane, 250 ug/kg), SB-6 (alpha-BHC, 6.6 ug/kg; beta-BHC, 11 ug/kg; gamma-BHC, 9.0 ug/kg; delta-BHC, 14 ug/kg; and endosulfan I, 11 ug/kg), SB-7 (heptachlor, 1.3 ug/kg), SB-8 (endosulfan I, 12 ug/kg), SB-9 (alpha-chlordane, 32 ug/kg), and SB-10 (endosulfan

I 11 ug/kg). Only one PCB (PCB 1254) was detected in one surface soil sample (SS-10) at a concentration of 2100 ug/kg. No PCBs were detected in any of the subsurface soil samples.

Three surface soil samples (SS-15, SS-16, and SS-17) collected during the RI were analyzed for dioxins and furans. The analytical results for these samples are summarized in Table 5-12. Twenty-two constituents were detected in at least one of the samples. The TEQ of the samples were: SS-15, 19 ng/kg; SS-16, 26 ng/kg; SS-17, 16 ng/kg. A duplicate sample of SS-15 contained a TEQ of 30 ng/kg (see Section 4.3.1 for a discussion of TEQ). All of these concentrations are well below the EPA clean-up goal of 1 ug/kg for residential areas (OSWER 1998).

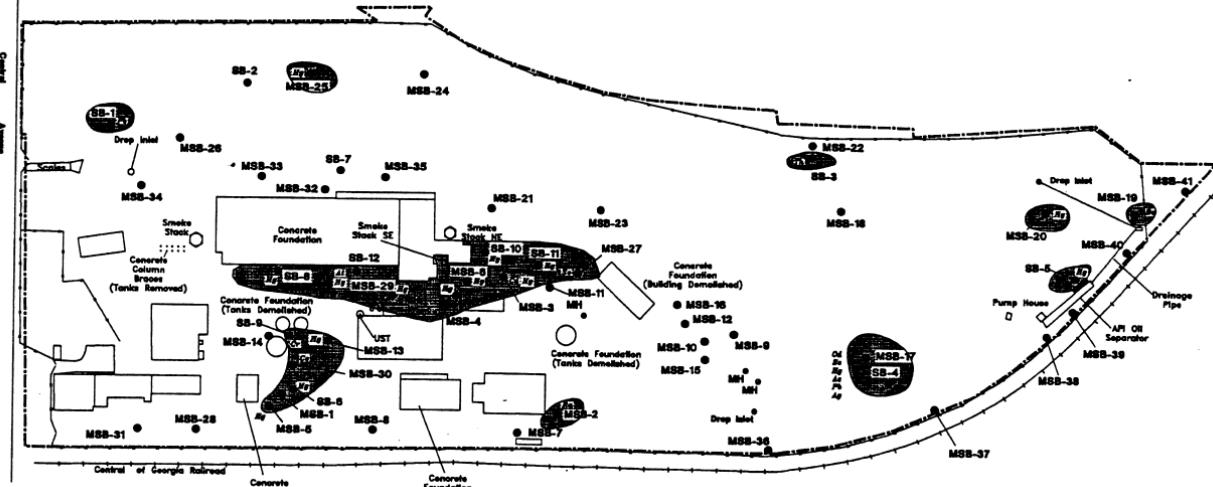
Inorganic constituents can occur naturally in soil. To determine that the presence of a particular constituent reflects contamination, the analytical data were evaluated with respect to comparison criteria developed from soil samples collected in background areas (see section 5.3.1).

Twenty-two TAL metals were detected at concentrations greater than the comparison criteria in at least one sample. As with the PAHs, all surface soil samples collected contained at least one TAL metal at a concentration exceeding the comparison criteria. At two locations (MSB-12 in the central part of the coke plant and MSB-14 in the storage tank area) the only metal detected above the background comparison criteria was sodium. Other metals detected above criteria in surface soils include arsenic, cadmium, chromium, copper, nickel, lead, antimony, selenium, vanadium, zinc, mercury, iron, and magnesium. Mercury was detected in most of the surface soil samples at concentrations ranging from 0.18 ug/kg to 29 mg/kg (in sample SS-12). Most of the mercury detections exceeding 1 mg/kg are located adjacent to the south side of coke ovens (SS-8, 1.2 mg/kg; SB-12, 29 mg/kg), and east of the coke ovens (SS-10, 4.9 mg/kg; MSB-27, 3.3 mg/kg; MSB-6, 3.1 mg/kg; MSB-4 3.4 mg/kg). Sample MSB-15-A, located in the central part of the coke plant, had a concentration of 19.4 mg/kg. **Figure 5-15** shows the estimated distribution of metals contamination (excluding sodium and potassium) in the subsurface soil.

W. 47th St

Coke

Avenue

**LEGEND**

- Manholes/Drop inlets
 - Underground Storage Tank
 - Soil Boring Sample - RI/FS
 - MSS-9 - Soil Boring - Mead
 - Coke Plant Boundary
 - Railroad
 - Fence
- Note: Excludes Na and K Data
- SCALE IN FEET

At several locations only one metal was detected at concentrations exceeding criteria: SB-3 (thallium), MSB-20 (mercury), SB-1(lead), MSB-25 (mercury), MSB-2 (barium). At two locations, relatively close to each other in the south central part of the coke plant (MSB-17 and SB-4), a wide variety of metals exceeded the criteria: cadmium, selenium, mercury, arsenic, lead and silver. The most apparent pattern of contamination is mercury at concentrations ranging from 0.19 mg/kg to 0.76 mg/kg in the area south and east of the coke ovens.

Cyanide was detected in surface soil collected at locations throughout the coke plant at concentrations ranging from 0.91 mg/kg to 77.5 mg/kg. Samples from the south and east side of the coke plant contained relatively higher concentrations than those found in other samples. Samples from this area include: MSB-7 (32.4 mg/kg), SS-14 (22 mg/kg), MSB-38 (77.5 mg/kg), SS-17 (59 mg/kg), MSB-39 (25.6 mg/kg), MSB-40 (67.3 mg/kg), and MSB-41 (21.6 mg/kg). Although there are no other apparent patterns of cyanide contamination, relatively higher concentrations were found in MSB-14 (55.8 mg/kg) located near the storage tanks, and MSB-29 (34 mg/kg) located near the coke ovens.

5.3.3 SCHWERMAN TRUCKING (ST) SITE

The soil investigation at the ST Site was conducted in two phases: an onsite screening of 22 surface soil samples for total PAHs, followed by collection of eight soil samples for offsite analysis of TAL and TCL constituents. Total PAHs were not detected in the initial (immunoassay screening) surface soil samples at concentrations greater than 10 ppm (the lower limit of the immunoassay test). The locations of the samples collected for laboratory analysis were generally between 4 and 20 feet from the edge of the waste material. In one case (SS-38), a sample was collected from a surface water runoff pathway at the base of the fill material.

The analytical results of the eight samples analyzed by the CLP laboratory are summarized in **Tables 5-17 and 5-18**. Only one sample (SS-43) was analyzed for TCL VOCs, and no VOCs were detected in that sample. PAHs were only detected in one of the eight samples, and the

TABLE 5-17
SURFACE SOIL SAMPLING SUMMARY - ORGANICS
SCHWERMAN TRUCKING SITE
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-36	SS-37	SS-38	SS-39	SS-40	SS-41
<u>SEMIVOLATILE ORGANICS</u>							
PYRENE		680U	710U	780U	710U	710U	660U
BENZO(A)ANTHRACENE		680U	710U	780U	710U	710U	660U
CHRYSENE		680U	710U	780U	710U	710U	660U
BENZO(B &/OR K)FLUORANTHENE		680U	710U	780U	710U	710U	660U
BENZO-A-PYRENE		680U	710U	780U	710U	710U	660U
INDENO (1,2,3-CD) PYRENE		680U	710U	780U	710U	710U	660U
<u>PESTICIDES/PCBs</u>							
ALPHA-BHC		18U	3.7U	4.0U	3.7U	18U	0.60JN
ENDOSULFAN I (ALPHA)		18U	3.7U	4.0U	3.7U	18U	3.4U
DIELDRIN		34U	1.6JN	2.9J	2.6J	36U	6.6U
4,4-DDT (P,P-DDT)		8.5J	7.2U	7.9U	2.7J	36U	6.6U
4,4-DDE (P,P-DDE)		34U	7.2U	7.9U	7.2U	36U	1.2J
ENDOSULFAN II (BETA)		34U	7.2U	7.9U	7.2U	36U	6.6U
ENDRIN ALDEHYDE		34U	7.2U	2.2JN	7.2U	36U	6.6U
GAMMA-CHLORDANE		18U	3.7U	4.0U	3.7U	18U	3.4U
ENDRIN KETONE		34U	7.2U	7.9U	7.2U	36U	6.6U

Data Qualifiers:

U=The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J=The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate.

The value preceding the "J" is the estimated value.

UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background

TABLE 5-17 (cont.)

SURFACE SOIL SAMPLING SUMMARY - ORGANICS
SCHWERMAN TRUCKING SITE
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-42	SS-43	SS-43 (dup.)
<u>SEMIVOLATILE ORGANICS</u>				
PYRENE		710U	110J	65J
BENZO(A)ANTHRACENE		710U	160J	590U
CHRYSENE		710U	180J	120J
BENZO(B &/OR K)FLUORANTHENE		710U	460J	340J
BENZO-A-PYRENE		710U	160J	97J
INDENO (1,2,3-CD) PYRENE		710U	63J	590U
<u>PESTICIDES/PCBs</u>				
ALPHA-BHC		3.7U	3.2U	15U
ENDOSULFAN I (ALPHA)		3.7U	1.1JN	15U
DIELDRIN		1.6J	6.2U	30U
4,4-DDT (P,P-DDT)		7.2U	6.2U	30U
4,4-DDE (P,P-DDE)		1.9JN	2.9J	30U
ENDOSULFAN II (BETA)		7.2U	6.2U	17JN
ENDRIN ALDEHYDE		7.2U	6.2U	30U
GAMMA-CHLORDANE		0.63J	3.2U	15U
ENDRIN KETONE		7.2U	12	30U

Data Qualifiers:

U=The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J=The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate.

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UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background

TABLE 5-18
1996 SOIL SAMPLING SUMMARY -INORGANICS
SCHWERMAN TRUCKING SITE
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-36	SS-37	SS-38	SS-39	SS-40	SS-41
<u>INORGANICS</u>							
ARSENIC		8.2J	9.1J	9.4J	7.9J	11J	8J
BARIUM		64	67	69	65	62	89
BERYLLIUM		0.32U	0.36U	0.38U	0.34U	0.35U	0.63J
CHROMIUM		3U	4U	2.3U	2.1U	3U	5.4
COPPER		10U	20U	20U	9U	8U	32
NICKEL		380	570	400	570	350	550
LEAD		29J	33J	35J	33J	29J	52J
ZINC		30U	40U	50U	40U	37	88
MERCURY		0.10U	0.2U	0.26	0.11U	0.10U	0.2U
ALUMINUM		13000	13000	13000	16000	18000	20000
MANGANESE		28	54	93	53	50	300
CALCIUM		2500J	4400J	3100J	3300J	3300J	16000J
IRON		8800	8800	9900	10000	16000	14000
MAGNESIUM		2000	2300	2200	2600	3100	4300
POTASSIUM		520	400	440	280	250	920

Data Qualifiers:

U=The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J=The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate.

The value preceding the "J" is the estimated value.

UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-18 (cont.)

**SURFACE SOIL SAMPLING SUMMARY -INORGANICS
SCHWERMAN TRUCKING SITE
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL	Sample ID:	SS-42	SS-43	SS-43 (dup.)
<u>INORGANICS</u>				
ARSENIC		8.9J	8.4J	8.9J
BARIUM		89	69	78
BERYLLIUM		0.35U	0.31U	0.32U
CHROMIUM		3U	3U	1.9U
COPPER		9U	8U	6U
NICKEL		450	310	310
LEAD		32J	29J	30J
ZINC		40U	30U	30U
MERCURY		0.11U	0.2U	0.2U
ALUMINUM		19000	11000	13000
MANGANESE		45	38	36
CALCIUM		2600J	2500J	2800J
IRON		11000	7700	7900
MAGNESIUM		3100	1900	2300
POTASSIUM		310	360	340

Data Qualifiers:

U=The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

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UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

concentrations of the analytes were below the comparison criteria. Nine pesticides were detected in at least one of the samples. Endosulfan I (alpha), dieldrin, 4,4-DDT, 4,4-DDE, gamma-chlordane and endrin ketone were detected at concentrations above background criteria. Dieldrin was detected above criteria in four samples and the other pesticides were only detected above the criteria in one of the samples.

Fifteen metals were detected in the soil samples. Three of these (copper, nickel, and mercury) were detected in at least one sample at concentrations exceeding the comparison criteria. Nickel exceeds the criteria in all samples and is present at concentrations (310 to 570 mg/kg) which is comparable to the concentrations detected in the waste samples (see section 4.3). The concentrations of nickel in surface soil at the ST Site are shown in **Figure 5-16**. No distinct pattern of contamination can be discerned.

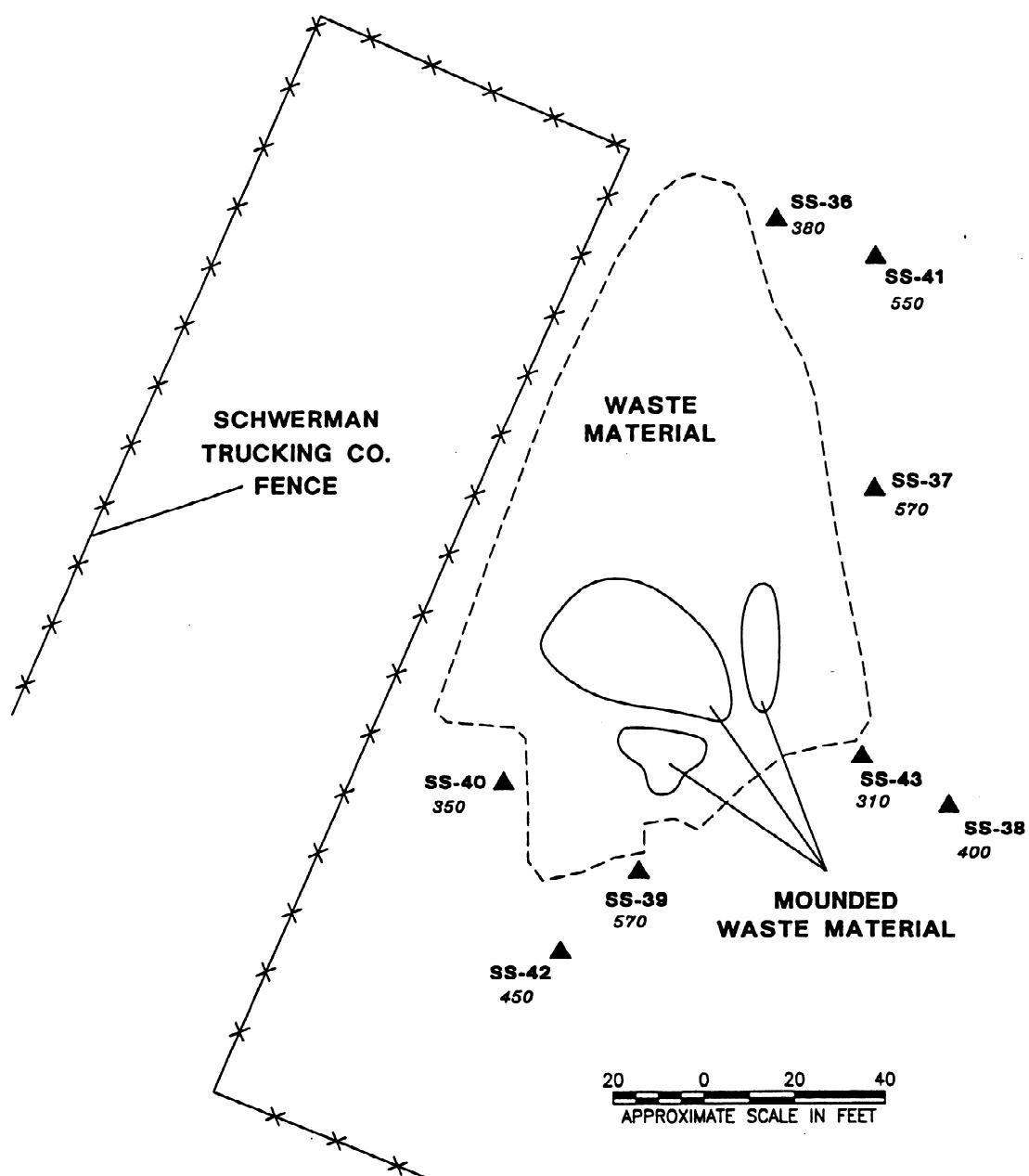
5.3.4 CHATTANOOGA CREEK TAR DEPOSIT

The analytical data for the surface soil samples collected near the Chattanooga Creek Tar deposit are summarized in **Tables 5-19** and **5-20**. The total concentration of PAHs that were detected at concentrations above the background criteria are shown in **Figure 5-17**. As is shown in this figure, these total concentrations range from below the detection limit at SS-48 located approximately 450 feet northwest of the tar deposit, to 39.7 mg/kg at SS-61, located upstream approximately 400 feet from the tar deposit. The highest concentrations of PAHs are found in samples from the grid row 200 feet north (downstream) of the deposit and the grid row 400 feet south (upstream) of the tar deposit.

Cadmium, chromium, copper, nickel, antimony, zinc, mercury, and sodium were all detected in at least one sample at concentrations above the background criteria. The criteria for sodium was exceeded in all samples, and the criteria for zinc was exceeded in all but two samples (SS-48 and SS-54). Concentrations of zinc exceeding the criteria ranged from 110 mg/kg to 290 mg/kg. Mercury was detected at concentrations exceeding the background criteria in all samples located

LEGEND

▲ SURFACE SOIL LAB SAMPLE
450 CONCENTRATION OF NI (mg/Kg)



CONCENTRATION OF NICKEL IN SURFACE SOIL -
SCHWERMAN TRUCKING SITE

nickel/BJW/96/160

CDM FEDERAL PROGRAMS CORPORATION
a subsidiary of Camp Dresser & McKee Inc.

Tennessee Products Site
Chattanooga, Tennessee

FIGURE No. 5-16

TABLE 5-19
SURFACE SOIL SAMPLING SUMMARY - ORGANICS
CHATTANOOGA CREEK TAR DEPOSIT
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-45	SS-46	SS-47	SS-48	SS-49	SS-50	SS-51	SS-52	SS-53	SS-54
<u>SEMIVOLATILE ORGANICS</u>											
NAPHTHALENE		160J	520U	490U	430U	470U	460U	1100U	1000U	890UR	410U
ACENAPHTHYLENE		460U	230J	490U	430U	470U	190J	510J	650J	890UR	140J
PHENANTHRENE		340J	260J	210J	430U	300J	500	690J	780J	340J	180J
ANTHRACENE		160J	520U	490U	430U	470U	370J	340J	490J	890UR	410U
FLUORANTHENE		550	1000	810	190J	1200	2000	3800	4500	2100J	940
PYRENE		700	650	600	150J	970	1700	2900	3900	1400J	600
BIS(2-ETHYLHEXYL) PHTHALATE		2300	520U	490U	430U	470U	460U	1100U	1000U	890UR	410U
BENZO(A)ANTHRACENE		560	910	610U	140J	1000	1400	2900	3500	1600J	700
CHRYSENE		780	1100	610	130J	1100	1600	3200	3900	1600J	730
BENZO(B & OR K)FLUORANTHENE		1500J	1700	2000J	230J	3000	2700	6500	8400	3000J	1500
BENZO-A-PYRENE		730J	1000	550	430U	940	1400	2900	3900	820J	770
INDENO (1,2,3-CD) PYRENE		460UJ	520U	490U	430U	820	1200	2100	2900	860J	590
DIBENZO(A,H)ANTHRACENE		460UJ	520U	490U	430U	470U	460U	670J	900J	890UR	410U
BENZO(GHI)PERYLENE		460UR	520UR	490UR	430UR	790J	1300J	1800J	1700J	890UR	540J
CARBAZOLE		460U	520U	490U	430U	470U	190J	1100U	1000U	890UR	150J
<u>PESTICIDES/PCBS</u>											
HEPTACHLOR EPOXIDE		12U	13U	13U	4.5U	4.9U	7.0U	25U	13U	20U	2.1U
ALPHA-BHC		12U	30U	40U	8U	30U	40U	220U	90U	100U	9.0U
BETA-BHC		12U	13U	13U	4.5U	29J	30U	130NJ	70J	68J	4.1NJ
GAMMA-BHC (LINDANE)		12U	13U	13U	4.5U	9.7	9.5	70	30U	28	2.6
DELTA-BHC		12U	13U	13U	4.5U	14N	13	78	42	41	2.3
ENDOSULFAN I (ALPHA)		15J	12JN	14J	3.0J	20J	20UR	50J	70J	33J	1.7JN
DIELDRIN		23U	26U	25U	8.7U	60U	40U	650	300	150U	10U
4,4-DDE (P,P-DDE)		23U	26U	22J	8.7U	25	9.3U	49	53	23N	4.1U
4,4-DDD (P,P-DDD)		23U	26U	25U	8.7U	9.4U	9.3U	48U	25U	22U	4.1U
ENDOSULFAN II (BETA)		23UJ	26UJ	13J	8.7UJ	9.4UJ	9.3UJ	48UJ	25UJ	22UJ	4.1UJ

Data Qualifiers:

U=The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J=The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate.

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Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background

TABLE 5-19 (cont.)

SURFACE SOIL SAMPLING SUMMARY - ORGANICS
CHATTANOOGA CREEK TAR DEPOSIT
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-55	SS-56	SS-57	SS-58	SS-59	SS-60	SS-61	SS-61 (dup.)	SS-62	SS-62 (dup.)
<u>SEMIVOLATILE ORGANICS</u>											
NAPHTHALENE		490U	460U	450U	420U	510U	890U	180J	2300U	470J	320J
ACENAPHTHYLENE		490U	260J	300J	250J	510	730J	660	1100J	960U	160J
PHENANTHRENE		180J	560	1000	580	850	950	1100	1600J	1300	820
ANTHRACENE		490U	240J	370J	260J	500J	570J	420J	2300U	420J	200J
FLUORANTHENE		490	2600	3300	3300	3100	4700	4800	7200	4200	2100
PYRENE		370J	1600	1900	1600	2000	3200	2400	4400	2400	1700
BIS(2-ETHYLHEXYL) PHTHALATE		490U	460U	450U	420U	510U	890U	2200	2300U	960U	490U
BENZO(A)ANTHRACENE		260J	1700	1900	2100	2400	3200	3000	4900	1800	1100
CHRYSENE		370J	1900	2000	1900	1700	3400	2100	4100	2100	1300
BENZO(B & OR K)FLUORANTHENE		570	3800	4100	4000	3700UJ	10000	6200	7000	3700	2500
BENZO-A-PYRENE		220J	1600	1500	1700	1900J	4400	2000	3700	1500	1000
INDENO (1,2,3-CD) PYRENE		240J	1300	1400	1300	1500J	3500	1600	3000	1300	830
DIBENZO(A,H)ANTHRACENE		490U	460U	1100U	580U	630UJ	1100U	1000U	2300U	960U	490U
BENZO(GHI)PERYLENE		310J	790J	300J	450J	1500J	3200J	1500J	2700J	450J	400J
CARBAZOLE		490U	340J	540J	200J	290J	310J	340J	2300U	790J	240J
<u>PESTICIDES/PCBS</u>											
HEPTACHLOR EPOXIDE		2.5U	22U	21U	11U	13U	62	22U	50U	2.5U	13U
ALPHA-BHC		7.0U	90U	70U	120N	100U	140U	60U	80U	5.0U	40U
BETA-BHC		5.0U	68NJ	50U	59J	50U	160J	66J	93J	2.5U	30U
GAMMA-BHC (LINDANE)		2.5U	22U	21U	34	27	23U	22U	22U	2.5U	13U
DELTA-BHC		3.7	39	35	33	30U	70	22U	22U	2.5U	20U
ENDOSULFAN I (ALPHA)		6.5J	38JN	36J	25J	23J	100J	55J	67J	3.5J	31J
DIELDRIN		9.0U	250U	880	30U	25U	620	500	530	26	220
4,4-DDE (P,P-DDE)		4.9U	57	54	21U	25U	100	65	72	3.1J	21J
4,4-DDD (P,P-DDD)		4.9U	42U	41U	21U	25U	83	43U	42U	4.8U	24U
ENDOSULFAN II (BETA)		4.9UJ	42UJ	41UJ	21UJ	25UJ	95J	49J	47J	2.1JN	24UJ

Data Qualifiers:

U=The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

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The value preceding the "J" is the estimated value.

UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

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Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background

TABLE 5-20
SURFACE SOIL SAMPLING SUMMARY - INORGANICS
CHATTANOOGA CREEK TAR DEPOSIT
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-45	SS-46	SS-47	SS-48	SS-49	SS-50	SS-51	SS-52	SS-53	SS-54
<u>INORGANICS</u>											
ARSENIC		6.2	11	11	7.1	8.8	7.9	10	12	9.9	4.2
BARIUM		74	130	150	100	150	130	130	150	120	41
BERYLLIUM		0.79J	1.3J	1.4J	1.1J	1.3J	1.3J	1.3J	1.5	1.4	0.54J
CADMIUM		0.36J	0.70J	0.60J	0.27U	0.64J	0.57J	0.70J	0.84J	0.26U	0.25U
COBALT		14J	22	20	14	22	18	21	22	16	10J
CHROMIUM		23J	60J	64J	25J	61J	42	120J	140J	66J	23
COPPER		21	30	34	25	23	40	46	46	24	17
NICKEL		18	33	37	19	31	40	34	38	22	14
LEAD		34	92	100	32	69	79	100	140	51	23
ANTIMONY		1.1U	1.7J	2U	1.1U	1.1U	1.1U	2U	2.2J	2U	0.98U
VANADIUM		24	30	34	28	30	27	28	31	30	14
ZINC		110	210	220	100	170	220	250	290	130	96
MERCURY		0.28	0.15U	0.42	0.48	1.0	0.34	0.83	0.89	0.26	0.64
ALUMINUM		8700	17000	20000	15000	18000	16000	15000	16000	18000	4200
MANGANESE		790	1300	1200	850	1700	1100	950	970	820	390
CALCIUM		2100	1800	2400	2200	2100	3600	3800	2400	1500	22000
IRON		15000	27000	28000	21000	24000	26000	24000	30000	27000	9900
MAGNESIUM		650	1200	1500	1200	1300	1400	1200	1300	1200	1300
SODIUM		81	96	100	81	83	88	89	80	70	54
POTASSIUM		640	1400	1900	1100	1500	1500	1400	1400	1200	570

Data Qualifiers:

U=The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J=The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate.

The value preceding "J" is the estimated value.

UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-20 (cont.)

SURFACE SOIL SAMPLING SUMMARY - INORGANICS
CHATTANOOGA CREEK TAR DEPOSIT
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-55	SS-56	SS-57	SS-58	SS-59	SS-60	SS-61	SS-61 (dup.)	SS-62	SS-62 (dup.)
<u>INORGANICS</u>											
ARSENIC		6.9	12	11	14	7.1	11	11	11	13	14
BARIUM		57	130	150	87	110	140	150	140	180	190
BERYLLIUM		0.56J	1.3J	1.4J	1.4	1J	1.3J	1.3J	1.2J	1.4J	1.5
CADMIUM		0.30U	0.28U	0.28U	0.25U	0.29U	0.36J	0.29U	0.38J	0.29U	0.29U
COBALT		16	22	18	24	15	20	20	18	18	18
CHROMIUM		19J	96J	120J	34J	38J	120	130	120J	81J	87J
COPPER		31	37	31	22	27	34	44	42	45	48
NICKEL		20	36	28	32	26	32	42	38	160	180
LEAD		47	120	96	30	63	90	94	100	110	120
ANTIMONY		1.2U	1.1U	1.9J	1U	1.2U	1.1U	1.8J	1.7J	1.2U	1.6J
VANADIUM		20	29	28	24	20	26	29	26	30	32
ZINC		120	230	210	110	150	220	250	260	250	270
MERCURY		0.15U	0.14U	0.14U	0.13U	0.15U	0.43	0.63	0.74	0.58	0.82
ALUMINUM		5300	14000	14000	12000	9400	13000	15000	12000	15000	16000
MANGANESE		480	1100	1200	960	1200	1100	960	910	930	930
CALCIUM		2700	2300	2100	1100	4000	2400	2500	2800	3300	3400
IRON		14000	28000	26000	21000	19000	23000	25000	2300	29000	31000
MAGNESIUM		510	1100	1100	760	1000	1000	1200	1000	1200	1300
SODIUM		48	45	62	33	44	60	53	50	69	75
POTASSIUM		470J	1000J	890J	700J	670J	720J	1100J	930J	1300J	1300J

Data Qualifiers:

U=The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

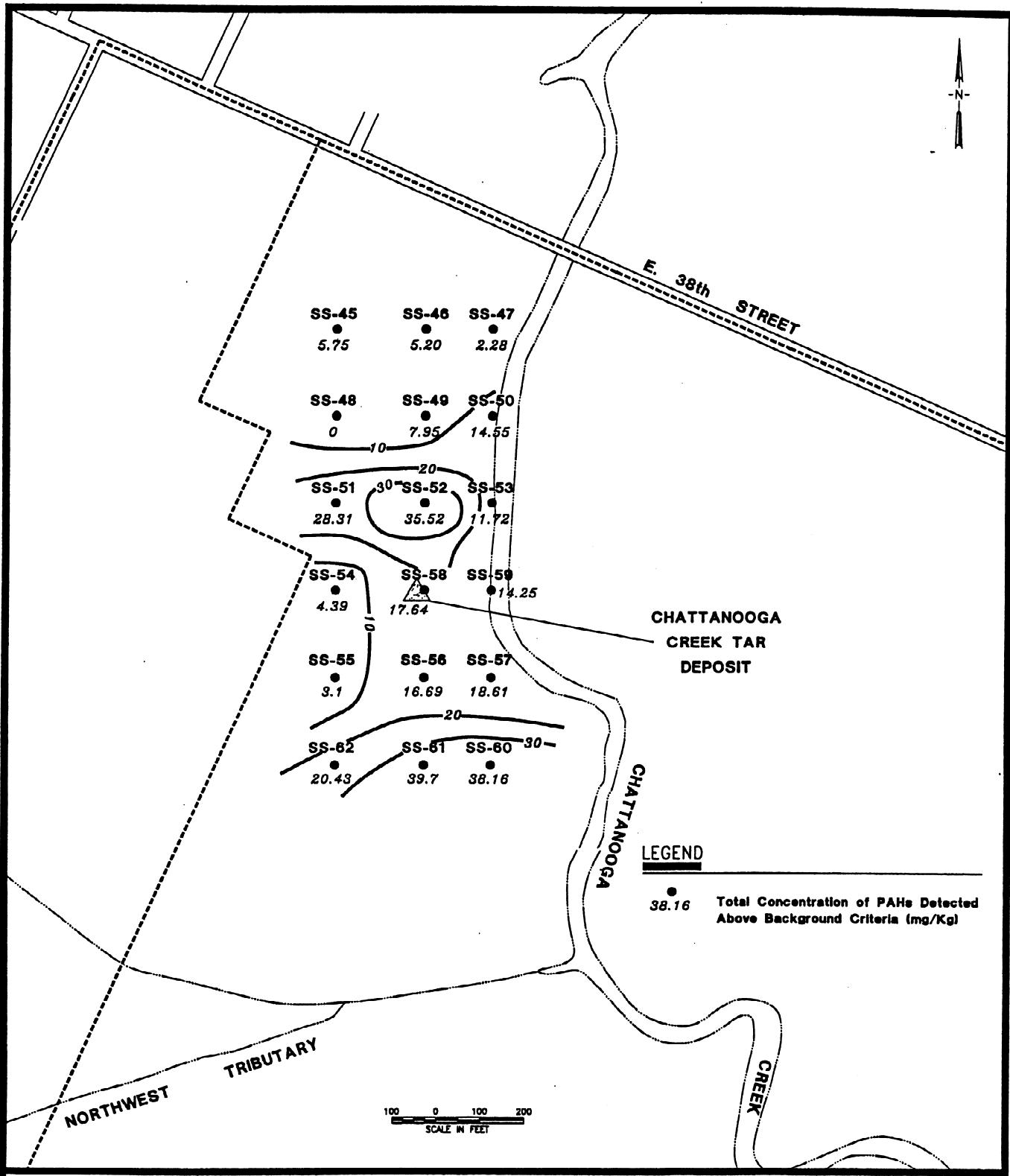
J=The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate.

The value preceding "J" is the estimated value.

UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.



CHAT_PAH/29JUL95/320

CDM FEDERAL PROGRAMS CORPORATION
a subsidiary of Camp Dresser & McKee Inc.

Tennessee Products Site
Chattanooga, Tennessee

FIGURE No. 5-17

north of the tar deposit except SS-48, and in all samples in the southernmost grid row (SS-60, SS-61, and SS-62). Concentrations of mercury ranged from 0.2 mg/kg to 1.0 mg/kg (at SS-49 located approximately 400 feet north of the deposit). The two samples with the fewest number of metals exceeding the criteria are SS-58, located immediately adjacent to the tar deposit, and SS-59 located 200 feet east of the tar deposit. No distinct pattern of contamination can be discerned.

5.3.5 RESIDENTIAL AREA

Analytical results of surface soil samples collected from the residential areas are summarized in **Tables 5-21 and 5-22**. Fifteen PAHs were detected in one or more of the samples. The total concentration of all PAH analytes that were present at concentrations above the background comparison criteria range from none (above comparison criteria) in sample SS-71, collected from the playground at the Piney Woods Elementary School, to 15,930 ug/kg detected in sample SS-67, collected along the east fenceline at Alton Park Junior High School. No distinct pattern of PAH contamination is evident.

As shown in Table 5-20, 10 pesticides were detected in 1 or more samples at concentrations that exceed the background criteria. These pesticides include aldrin, heptachlor, heptachlor epoxide, endosulfan I (alpha), dieldrin, 4,4-DDE, 4,4-DDT, gamma-chlordane, alpha-chlordane and endrin ketone. The most frequently detected pesticide is endosulfan I (alpha) which was detected in 9 of the 11 residential area soil samples at concentrations ranging from 2.3 ug/kg to 57 ug/kg. The highest concentration of a single pesticide was 1800 ug/kg of dieldrin in sample SS-72. Only one PCB (PCB-1254) was detected at a concentration of 160 ug/kg, in one sample.

Twenty metals were detected in at least 1 sample, and 14 were detected at concentrations exceeding the comparison criteria. Those metals which were detected above the criteria in more than two samples include cadmium (8 samples), copper (6 samples), antimony (7 samples), zinc

TABLE 5-21
SURFACE SOIL SAMPLING SUMMARY - ORGANICS
RESIDENTIAL AREAS
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SS-65	SS-66	SS-67	SS-68	SS-69	SS-70	SS-71
<u>SEMIVOLATILE ORGANICS</u>							
ACENAPHTHENE	420U	430U	410U	460U	430U	430U	420U
FLUORENE	420U	430U	410U	460U	140J	430U	420U
PHENANTHRENE	560	230J	1600	440J	1600	1200	420U
ANTHRACENE	420U	430U	190J	460U	430U	290J	420U
FLUORANTHENE	1300	620	3700	930	2000	2500	290J
PYRENE	1000	550	2100	540J	1200J	1800	250J
BENZO(A)ANTHRACENE	970	360J	1400	380J	600J	1200	130J
CHRYSENE	890	380J	1400	450J	780J	1200	190J
BENZO(B &/OR K)FLUORANTHENE	1900	490	2900	480J	1600J	1300J	260J
BENZO-A-PYRENE	840	280J	1000	390J	540J	780J	420U
INDENO (1,2,3-CD) PYRENE	420U	280J	730	280J	320J	430UJ	420U
DIBENZO(A,H)ANTHRACENE	420U	430U	300	460U	430UJ	430UJ	420U
BENZO(GHI)PERYLENE	420UR	430UR	370J	200J	430UR	430UR	420UR
2-METHYLNAPHTHALENE	420UJ	430UJ	410UJ	460UJ	130J	430UJ	420UJ
CARBAZOLE	420U	430U	240J	460U	400J	330J	420U
<u>PESTICIDES/PCBs</u>							
ALDRIN	11U	2.2U	11U	4.8U	2.2U	11U	2.2U
HEPTACHLOR	11U	2.2U	11U	4.8U	2.2U	2.6J	2.2U
HEPTACHLOR EPOXIDE	20U	2.2U	11U	4.8U	2.2U	20U	2.2U
ENDOSULFAN I (ALPHA)	11UR	6.6J	19J	5.5J	2.3J	33J	8.9J
DIELDRIN	300	2.8J	21U	18	4.3U	9.4J	4.2U
4,4-DDT (P,P-DDT)	21U	9.0U	21U	2.9J	4.3U	22U	3.3J
4,4-DDE (P,P-DDE)	21U	12	21U	2.6JN	1.3J	41	1.2JN
PCB-1254	210U	160	210U	93U	43U	220U	42U
GAMMA-CHLORDANE	75	2.2U	11U	4.8U	2.2U	20U	2.2U
ALPHA-CHLORDANE	130U	2.2U	11U	4.8U	2.2U	24	2.2U
ENDRIN KETONE	21U	4.3U	21U	9.3U	4.3U	22U	4.2U

Data Qualifiers:

U=The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J=The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate.

The value preceding the "J" is the estimated value.

UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background

TABLE 5-21 (cont.)
SURFACE SOIL SAMPLING SUMMARY - ORGANICS
RESIDENTIAL AREAS
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SS-72	SS-73	SS-73 (dup.)	SS-75	SS-75 (dup.)	SS-77
<u>SEMIVOLATILE ORGANICS</u>						
ACENAPHTHENE	430U	420U	420U	560J	770J	450UJ
FLUORENE	430U	420U	420U	1800U	680J	450UJ
PHENANTHRENE	230J	1300	460	3800	7000	1300J
ANTHRACENE	430U	180J	420U	870J	1400J	300J
FLUORANTHENE	510	1800	600	10000	11000	1800J
PYRENE	350J	1500	500	5100	8600	1900
BENZO(A)ANTHRACENE	200J	900	410J	3300	6100	960
CHRYSENE	210J	1100	520	4400	5800	1100
BENZO(B &/OR K)FLUORANTHENE	350J	4000J	850J	6700J	9000J	1300J
BENZO-A-PYRENE	150J	1700	410J	2900	5000	690
INDENO (1,2,3-CD) PYRENE	430UJ	420U	420U	2300	1800U	830
DIBENZO(A,H)ANTHRACENE	430UJ	420U	420U	1800U	1800U	490
BENZO(GHI)PERYLENE	140J	420UR	420UR	1800UR	1800UR	900J
2-METHYLNAPHTHALENE	430UJ	420UJ	420UJ	1800UJ	1800UJ	200J
CARBAZOLE	430U	390J	180J	1800U	1700J	590J
<u>PESTICIDES/PCBs</u>						
ALDRIN	23	11U	11U	9.4U	9.3U	11U
HEPTACHLOR	16J	11U	11U	9.4U	9.3U	11U
HEPTACHLOR EPOXIDE	89	11U	11U	9.4U	9.3U	11U
ENDOSULFAN I (ALPHA)	22UR	10J	11J	48J	57J	31J
DIELDRIN	1800	21U	21U	18U	18U	22U
4,4-DDT (P,P-DDT)	36J	6.4J	12J	21	18U	16J
4,4-DDE (P,P-DDE)	21J	3.9J	4.5JN	18U	18U	15J
PCB-1254	430U	210U	210U	180U	180U	220U
GAMMA-CHLORDANE	180	11U	11U	9.4U	9.3U	4.2J
ALPHA-CHLORDANE	160U	11U	11U	9.4U	9.3U	11U
ENDRIN KETONE	43U	21U	21U	15JN	18U	22U

Data Qualifiers:

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N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background

TABLE 5-22
SURFACE SOIL SAMPLING SUMMARY - INORGANICS
RESIDENTIAL AREAS
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	SS-65	SS-66	SS-67	SS-68	SS-69	SS-70	SS-71
<u>INORGANICS</u>							
ARSENIC	14	11	8.3	9.3	11	12	8.3
BARIUM	160	170	190	150	190	170	76
BERYLLIUM	1.3	1.3	1.3	1.1J	1.4J	0.75J	0.66J
CADMUM	0.65J	0.53J	0.25U	0.40J	0.45J	0.43J	0.27U
COBALT	31	21	20	22	16	19	13J
CHROMIUM	55J	34	25J	25	34	21	17J
COPPER	41	38	30	28	44	43	21
NICKEL	42	40	17	18	25	24	12
LEAD	120JN	94JN	68	160	210JN	150	70
ANTIMONY	2.3J	1.6J	1.9J	2U	4J	1.6J	1.1U
VANADIUM	45	40	39	39	51	30	27
ZINC	240	250	140	170	280	330	120
MERCURY	0.46	0.25	0.13U	0.14U	0.14U	0.13U	0.14U
ALUMINUM	22000	23000	23000	20000	32000	11000	11000
MANGANESE	1900	1200	2000	1700	730	1300	730
CALCIUM	3900	4100	2100	4400	2400	5600	8400
IRON	45000	36000	32000	36000	46000	28000	26000
MAGNESIUM	1200	1300	1400	1200	2300	890	1700
SODIUM	130	230	83	81	120	84	57
POTASSIUM	1800	2700	2100	1600	3100	830J	1100J

Data Qualifiers:

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N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-22 (cont.)

**SURFACE SOIL SAMPLING SUMMARY - INORGANICS
RESIDENTIAL AREAS
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL	SS-72	SS-73	SS-73 (dup.)	SS-75	SS-75 (dup.)	SS-77
<u>INORGANICS</u>						
ARSENIC	15	11	9.8	3.2	2.6	13
BARIUM	240	150	140	22	22	150
BERYLLIUM	1.1J	0.88J	0.81J	0.22U	0.22U	0.76J
CADMUM	0.53J	0.25U	0.26U	0.26J	0.22U	0.42J
COBALT	20	21	20	3.3J	2.9J	12J
CHROMIUM	28J	23J	18J	4J	3.7J	23J
COPPER	45	22	22	8.5	8.6	49
NICKEL	17	14	13	6U	6U	17
LEAD	270	130	130	21	17	240
ANTIMONY	1.9J	2U	1U	0.87U	0.87U	1.9J
VANADIUM	30	29	26	3.7J	3.2J	31
ZINC	880	200	200	38	39	470
MERCURY	0.13U	0.13U	0.36	0.11U	0.11U	1.1
ALUMINUM	14000	14000	13000	2100	1900	13000
MANGANESE	2800	2200	2100	120	130	1000
CALCIUM	4200	1700	1700	304000	320000	14000
IRON	28000	23000	22000	6300	6600	28000
MAGNESIUM	830	950	860	13000	12000	1800
SODIUM	63	41	44	140	140	100
POTASSIUM	1400J	1100J	1100J	900J	870J	1100J

Data Qualifiers:

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UJ=The chemical was analyzed for but was not detected. The value is the estimated quantitation limit.

N=There is presumptive evidence of the presence of the chemical, but the measurement cannot be considered accurate.

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

(10 samples), mercury (4 samples), and sodium (9 samples). There is no apparent pattern to the distribution of metals contamination.

5.3.6 LANDES PROPERTY

In August of 1996, during excavation on the eastern part of the Landes property, contaminated soils were encountered. An east-west oriented concrete pipe was unearthed and the construction crew dug a trench to allow the contents of the pipe to drain. The sampling on the Landes property include soil from the spoils piles of the trench (SS-90, SS-89, SS-91) and soil that was undisturbed by the construction activity (SS-87 and SS-88). Analytical results for the soil samples collected on the Landes Property are summarized on **Tables 5-23 and 5-25**.

The soil that had not been disturbed by the excavation activities contained only low levels of VOCs (benzene and toluene at concentrations of 6 J ug/kg and 4 J ug/kg respectively in SS-87). That same sample contained lindane (3200 ug/kg), methoxychlor (1300 J ug/kg)and endrin ketone (460 ug/kg). Sample SS-88 contained not detectable levels of organic constituents. Elevated concentrations of benzene (1900 ug/kg to 180,000 ug/kg), toluene (440 ug/kg to 290,000 ug/kg), chlorobenzene (340 ug/kg to 64,000 J ug/kg), ethylbenzene (300 ug/kg to 850 ug/kg) and total xylenes (1,500 ug/kg to 300,000 ug/kg) were detected in all soil samples collected from the spoils piles. Alpha BHC, beta BHC, gamma BHC (lindane) and 4,4-DDT were detected in one or more of the spoils pile samples. No pesticides were detected in sample SS-89.

Elevated concentrations PAHs were detected in all soil samples collected on the Landes property. The samples from undisturbed areas contained 1,745,000 ug/kg total PAH (SS-87) and 256,400 ug/kg total PAH (SS-88). The concentration of total PAH in samples from the spoils piles ranged from 3,023,000 ug/kg (SS-89) to 68,000,000 ug/kg (duplicate of SS-90). Sample SS-90 and SS-88 also contained 1,4-dichlorobenzene. 1,3-Dichlorobenzene and 1,2-dichlorobenzene

TABLE 5-23
SURFACE SOIL SAMPLING SUMMARY - VOCs/PESTICIDES
LANDES COMPANY PROPERTY AND NORTHEAST TRIBUTARY AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-87	SS-88	SS-89	SS-90	SS-90 (DUP.)	SS-91	PIT-01	NET-01
<u>VOLATILE ORGANICS</u>									
BENZENE		6J	11U	1900	12000	36000J	180000	2300	11U
TOLUENE		4J	11U	440	60000	98000J	290000	140	11U
CHLOROBENZENE		12UJ	11U	340	42000	64000J	280	19U	11U
ETHYL BENZENE		12UJ	11U	300	810	850	750	150	11U
TOTAL XYLEMES		12UJ	11U	1500	39000	70000J	300000	940	11U
CARBON DISULFIDE		12UJ	11U	130U	140U	150U	110J	19U	11U
METHYL ETHYL KETONE		12UJ	11U	130U	140U	150U	150U	68S	11U
<u>PESTICIDES</u>									
ALPHA BHC		7000U	250N	300U	1700	4300N	10000N	1600	370
BETA BHC		2000U	180N	220U	870	2500	9300	65U	50U
GAMMA BHC (LINDANE)		3200	60U	220U	520	1600N	7900	340U	36U
DELTA BHC		1300N	200U	400U	600U	2000U	2600U	65U	60U
DIELDRIN		600U	38U	440U	460U	480U	5100U	240U	70U
4,4-DDT (P,P-DDT)		390U	38U	440U	420J	1000	6000U	220U	340U
4,4-DDE (P,P-DDE)		400U	38U	440U	460U	700N	5100U	1700U	360U
ENDOSULFAN II (BETA)		390U	38U	440U	460U	480U	5100U	130U	200U
ENDRIN ALDEHYDE		390U	38U	440U	460U	480U	5100U	2700	70U
METHOXYCHLOR		1300J	200U	2200U	2400U	3000U	26000U	2800U	36000N
ENDRIN KETONE		460	38U	440U	460U	480U	5100U	130U	70U

Data Qualifiers:

U = The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J = The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate. The value preceding the "J" is the estimated value.

UJ = The chemical was analyzed for, but not detected. The value is estimated for the minimum quantitation limit.

C = The result was confirmed by GCMS.

N = There is presumptive evidence of presence of chemical, but the measurement can not be considered accurate.

S = The chemical was also detected in the water supply used for decontamination of the sampling equipment at a comparable concentration.

TABLE 5-23 (cont.)

SURFACE SOIL SAMPLING SUMMARY - VOCs/PESTICIDES
LANDES COMPANY PROPERTY AND NORTHEAST TRIBUTARY AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	NET-01 (DUP.)	NET-02	NET-03	NET-04	NET-05	NET-06	NET-07	NET-08
<u>VOLATILE ORGANICS</u>									
BENZENE		11U	15U	13U	14U	15U	16U	11U	14U
TOLUENE		11U	15U	13U	14U	15U	16U	11U	14U
CHLOROBENZENE		11U	15U	13U	14U	15U	16U	11U	14U
ETHYL BENZENE		11U	15U	13U	14U	15U	16U	11U	14U
TOTAL XYLEMES		11U	15U	13U	14U	15U	16U	11U	14U
CARBON DISULFIDE		11U	15U	13U	14U	15U	16U	11U	14U
METHYL ETHYL KETONE		11U	15U	13U	14U	15U	16U	11U	14U
<u>PESTICIDES</u>									
ALPHA BHC		390N	4800C	1500N	1000N	600	430U	1000	680
BETA BHC		92U	200U	190U	23U	260U	80U	80U	290N
GAMMA BHC (LINDANE)		92U	60U	110	23U	50U	14U	38U	46U
DELTA BHC		92U	290	150	120	250	44	120U	280
DIELDRIN		180U	72U	85U	60U	97U	52N	74U	89U
4,4-DDT (P,P-DDT)		340U	530U	110U	60U	97U	26U	370U	89U
4,4-DDE (P,P-DDE)		320U	72U	85U	450N	130U	26U	410U	89U
ENDOSULFAN II (BETA)		220U	72U	85U	240U	97U	50U	260U	89U
ENDRIN ALDEHYDE		180U	72U	85U	130U	97U	30U	80U	89U
METHOXYCHLOR		56000	14000C	5500C	15000C	15000C	1600U	37000N	8500
ENDRIN KETONE		180U	72U	85U	390U	97U	26U	74U	89U

Data Qualifiers:

U = The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J = The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate. The value preceding the "J" is the estimated value.

UJ = The chemical was analyzed for, but not detected. The value is estimated for the minimum quantitation limit.

C = The result was confirmed by GCMS.

N = There is presumptive evidence of presence of chemical, but the measurement can not be considered accurate.

S = The chemical was also detected in the water supply used for decontamination of the sampling equipment at a comparable concentration.

TABLE 5-23 (cont.)

SURFACE SOIL SAMPLING SUMMARY - VOCs/PESTICIDES
LANDES COMPANY PROPERTY AND NORTHEAST TRIBUTARY AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	NET-09	NET-10	NET-10 (DUP.)
<u>VOLATILE ORGANICS</u>				
BENZENE		20U	120	670
TOLUENE		20U	140	180
CHLOROBENZENE		20U	18U	17U
ETHYL BENZENE		20U	9J	11J
TOTAL XYLEMES		20U	160	150
CARBON DISULFIDE		20U	18U	17U
METHYL ETHYL KETONE		20U	18U	17U
<u>PESTICIDES</u>				
ALPHA BHC		530	5100U	590U
BETA BHC		70U	15U	14U
GAMMA BHC (LINDANE)		16U	15U	14U
DELTA BHC		90U	15U	14U
DIELDRIN		120	29U	28U
4,4-DDT (P,P-DDT)		32U	580U	28U
4,4-DDE (P,P-DDE)		32U	13000	1700
ENDOSULFAN II (BETA)		32U	200	70U
ENDRIN ALDEHYDE		32U	9700U	1400U
METHOXYCHLOR		3100C	78000	9600C
ENDRIN KETONE		100U	210U	350U

Data Qualifiers:

U = The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J = The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate. The value preceding the "J" is the estimated value.

UJ = The chemical was analyzed for, but not detected. The value is estimated for the minimum quantitation limit.

C = The result was confirmed by GCMS.

N = There is presumptive evidence of presence of chemical, but the measurement can not be considered accurate.

S = The chemical was also detected in the water supply used for decontamination of the sampling equipment at a comparable concentration.

TABLE 5-24
SURFACE SOIL SAMPLING SUMMARY - SVOCs
LANDES COMPANY PROPERTY AND NORTHEAST TRIBUTARY AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-87	SS-88	SS-89	SS-90	SS-90 (DUP.)	SS-91	PIT-01	NET-01
1,3-DICHLOROBENZENE		12000U	11000U	13000U	14000U	2800J	15000U	160000U	110000U
1,4-DICHLOROBENZENE		12000U	6000J	13000U	8100J	24000	15000U	160000U	110000U
1,2-DICHLOROBENZENE		12000U	11000U	13000U	5600J	16000	3800J	160000U	110000U
1,2,4-TRICHLOROBENZENE		12000U	6300J	13000U	14000U	15000U	15000U	160000U	110000U
NAPHTHALENE	32000	4100J	910000	6600000	22000000	6300000	5500000	110000U	
ACENAPHTHYLENE	61000	4500J	26000	220000J	1600000J	400000J	220000	220000	97000J
ACENAPHTHENE	14000	5900J	190000	1100000J	2800000J	1400000J	760000	18000J	
FLUORENE	59000	11000U	250000	1700000J	5700000J	31000	1500000		17000J
PHENANTHRENE	140000	21000	520000	3900000	13000000	6400000	4800000		120000
ANTHRACENE	54000	7600J	140000	1200000J	4700000J	1800000	1100000		63000J
DI-N-BUTYLPHthalATE		12000U	11000U	21000	14000U	15000U	15000U	160000U	110000U
FLUORANTHENE	330000	56000	300000	2500000	8000000	4600000	3600000		1400000
PYRENE	91000	42000	51000	490000J	1900000J	1000000	2000000		1500000J
BENZO(A)ANTHRACENE	220000	32000	120000J	890000J	2900000J	1500000	830000		740000
CHRYSENE	200000	38000	84000	660000J	3200000J	1300000	660000		820000
BENZO(B &/OR K)FLUORANTHENE	430000	15000	120000	830000J	2200000J	1600000J	900000J		1300000J
BENZO-A-PYRENE	26000	10000J	8900J	62000	7400000U	160000J	650000		840000
INDENO (1,2,3-CD) PYRENE	40000	13000	8200J	56000	7400000U	15000U	250000		380000
DIBENZO(A,H)ANTHRACENE	48000	7300J	12000J	72000	7400000U	78000	160000U		150000U
BENZO(GHI)PERYLENE		12000U	11000U	13000U	14000U	15000U	110000	250000	390000
PHENOL		12000U	11000U	13000U	14000U	15000U	15000U	160000U	110000U
2,4-DIMETHYLPHENOL		12000U	11000U	2700J	17000	7400000U	15000U	160000U	110000U
2-METHYLNAPHTHALENE	13000	11000U	300000	2400000	8100000	15000U	1500000		110000U
DIBENZOFURAN	14000	1300J	180000	1200000J	4000000J	1800000	800000		110000U
2-METHYLPHENOL		12000U	11000U	13000U	9700J	43000	14000J	160000U	110000U
(3- AND/OR 4-)METHYLPHENOL		12000U	11000U	13000U	14000U	15000U	25000	160000U	110000U
CARBAZOLE	13000	2900J	37000	340000J	1100000J	15000U	410000		110000U

Data Qualifiers:

U = The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J = The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate. The value preceding the "J" is the estimated value.

Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background

TABLE 5-24 (cont.)

SURFACE SOIL SAMPLING SUMMARY - SVOCs
LANDES COMPANY PROPERTY AND NORTHEAST TRIBUTARY AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	NET-01 (DUP.)	NET-02	NET-03	NET-04	NET-05	NET-06	NET-07	NET-08
1,3-DICHLOROBENZENE		11000U	4800U	4300U	120000U	59000U	11000U	150000U	4400U
1,4-DICHLOROBENZENE		11000U	4800U	4300U	120000U	59000U	11000U	150000U	4400U
1,2-DICHLOROBENZENE		11000U	4800U	4300U	120000U	59000U	11000U	150000U	4400U
1,2,4-TRICHLOROBENZENE		11000U	4800U	4300U	120000U	59000U	11000U	150000U	4400U
NAPHTHALENE		7400J	10000	2600J	120000U	6000J	82000	16000J	1400J
ACENAPHTHYLENE		60000	49000J	18000	47000J	47000J	13000	67000J	12000
ACENAPHTHENE		13000	6600	4300U	120000U	59000U	15000	16000J	4400U
FLUORENE		14000	9100	1900J	120000U	59000U	27000	150000U	4400U
PHENANTHRENE		66000	30000	9300	39000J	22000J	100000J	77000J	4000J
ANTHRACENE		40000	44000J	10000	25000J	45000J	37000	54000J	6200
DI-N-BUTYLPHthalATE		11000U	4800U	4300U	120000U	59000U	11000U	150000U	4400U
FLUORANTHENE		110000	1700000	48000	440000	350000	140000J	900000	22000
PYRENE		120000	2000000	39000	400000	300000	110000J	840000	26000
BENZO(A)ANTHRACENE		80000	840000	38000	340000	300000	74000	520000	24000
CHRYSENE		87000	840000	34000	320000	330000	71000	510000	24000
BENZO(B &/OR K)FLUORANTHENE		240000J	1800000J	92000J	600000J	700000J	110000J	900000J	45000J
BENZO-A-PYRENE		150000	1000000	47000	390000	370000	70000	560000	25000
INDENO (1,2,3-CD) PYRENE		81000	470000	33000	200000	190000	34000	280000	15000
DIBENZO(A,H)ANTHRACENE		76000U	96000J	21000U	120000U	59000U	11000U	150000U	14000U
BENZO(GHI)PERYLENE		86000	500000	33000	200000	180000	38000	300000	15000
PHENOL		11000U	4800U	4300U	120000U	59000U	11000U	150000U	4400U
2,4-DIMETHYLPHENOL		11000U	4800U	4300U	120000U	59000U	11000U	150000U	4400U
2-METHYLNAPHTHALENE		2100J	3600J	930J	120000U	59000U	27000	150000U	4400U
DIBENZOFURAN		3600J	3500J	900J	120000U	59000U	19000	150000U	550J
2-METHYLPHENOL		11000U	4800U	4300U	120000U	59000U	11000U	150000U	4400U
(3- AND/OR 4-)METHYLPHENOL		11000U	4800U	4300U	120000U	59000U	11000U	150000U	4400U
CARBAZOLE		6000J	8900	2200J	120000U	6600J	6400J	150000U	1100J

Data Qualifiers:

U = The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J = The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate. The value preceding the "J" is the estimated value.

Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background

TABLE 5-24 (cont.)

SURFACE SOIL SAMPLING SUMMARY - SVOCs
LANDES COMPANY PROPERTY AND NORTHEAST TRIBUTARY AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	NET-09	NET-10	NET-10 (DUP.)
1,3-DICHLOROBENZENE		13000U	12000U	11000U
1,4-DICHLOROBENZENE		13000U	12000U	11000U
1,2-DICHLOROBENZENE		13000U	12000U	11000U
1,2,4-TRICHLOROBENZENE		13000U	12000U	11000U
NAPHTHALENE		48000	190000J	180000J
ACENAPHTHYLENE		15000	30000	33000
ACENAPHTHENE		10000J	94000J	87000
FLUORENE		49000	160000J	140000J
PHENANTHRENE		40000	1900000	1800000
ANTHRACENE		28000	210000J	210000J
DI-N-BUTYLPHthalate		13000U	12000U	11000U
FLUORANTHENE		89000	1900000	1600000
PYRENE		60000	1100000	1200000
BENZO(A)ANTHRACENE		51000	550000	650000
CHRYSENE		54000	530000	550000
BENZO(B &/OR K)FLUORANTHENE		70000J	80000J	90000J
BENZO-A-PYRENE		45000	190000J	420000
INDENO (1,2,3-CD) PYRENE		27000	130000J	160000J
DIBENZO(A,H)ANTHRACENE		13000U	47000U	52000U
BENZO(GHI)PERYLENE		28000	120000J	340000
PHENOL		3100J	12000U	11000U
2,4-DIMETHYLPHENOL		1300J	12000U	11000U
2-METHYLNAPHTHALENE		10000J	170000J	160000J
DIBENZOFURAN		24000	150000J	140000J
2-METHYLPHENOL		13000U	12000U	11000U
(3- AND/OR 4-)METHYLPHENOL		13000U	12000U	11000U
CARBAZOLE		18000	94000J	96000J

Data Qualifiers:

U = The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J = The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate. The value preceding the "J" is the estimated value.

Concentrations presented in ug/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of a constituent at concentrations above background

TABLE 5-25
SURFACE SOIL SAMPLING SUMMARY - INORGANICS
LANDES COMPANY PROPERTY AND NORTHEAST TRIBUTARY AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	SS-87	SS-88	SS-89	SS-90	SS-90 (DUP.)	SS-91	PIT-01	NET-01
SILVER		2J	1.4J	1.1U	1.3U	1.2U	4.9	1U	1U
ARSENIC		21	14	5.1	24	26	62	27	8.3
BARIUM		250	170	110	130	120	200	120	47
BERYLLIUM		0.38J	1.4	0.85J	0.77J	0.89J	0.98J	1.1J	1U
CADMIUM		0.78J	0.79J	0.23J	1.6	2.3	2	1U	1U
COBALT		13	38	10J	6.7J	8.1J	7.7J	8.8J	1.2J
CHROMIUM		68	38	13	21	21	47	110	9.1
COPPER		100J	24J	11J	160J	150J	320J	110	18
NICKEL		22	16	9U	27	24	21	28	3U
LEAD		210	62	17	190	160	200	130	56
SELENIUM		3.4	0.46J	0.50U	5.4	3.5	16	6.2J	1.4J
THALLIUM		0.60U	0.60U	0.65U	0.77U	0.72U	3U	1.1U	0.66U
VANADIUM		19	39	22	17	21	20	28	8J
ZINC		84J	75J	37J	220J	210J	180J	160J	68J
MERCURY		1.8	0.38	0.1U	1.0	0.60	4.3	0.80	4.4
ALUMINUM		6500	16000	12000	10000	12000	4500	12900	2600
MANGANESE		1500	3300	580	210	260	2000	190	35
CALCIUM		2600J	3300J	1700J	3700J	3800J	5300J	2800	200
IRON		40000	39000	16000	22000	22000	26000	25000	7200
MAGNESIUM		660J	850J	720J	850J	970J	510J	960	140
SODIUM		320U	130U	220U	350	330U	440U	310	130
POTASSIUM		750	1200	330	1100	1200	770	1200	290
CYANIDE		26	3.3	0.85	13	10	45	6.2	9.7

Data Qualifiers:

U = The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J = The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate. The value preceding the "J" is the estimated value.

N = There is presumptive evidence of presence of chemical, but the measurement can not be considered accurate.

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-25 (cont.)
SURFACE SOIL SAMPLING SUMMARY - INORGANICS
LANDES COMPANY PROPERTY AND NORTHEAST TRIBUTARY AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE

CHEMICAL	Sample ID:	NET-01 (DUP.)	NET-02	NET-03	NET-04	NET-05	NET-06	NET-07	NET-08
SILVER		0.80J	1U	0.12U	0.25J	1U	0.14U	0.32J	1U
ARSENIC		17	19	7.2	19	29	3.4J	17	9.6
BARIUM		150	110	120	130	120	96	83	160
BERYLLIUM		0.33J	1U	0.53J	0.66J	0.64J	0.83J	0.49J	1.3J
CADMIUM		1U	0.11U	0.09U	0.10U	1U	1U	0.09U	1U
COBALT		2.2J	8.3J	4.7J	4.6J	4.7J	6.2J	6.1J	26
CHROMIUM		25	62	31	39	54	22	30	41
COPPER		51	95	39	110	120	21	50	40
NICKEL		5U	20U	8U	10U	10U	20U	9U	14
LEAD		230	83	42	88	110	31	130	76
SELENIUM		3.8J	7.8J	3.6J	6.9J	8.3J	2.3J	4.7J	3.8J
THALLIUM		0.65U	2U	1U	0.77U	0.80U	0.82U	1U	0.79U
VANADIUM		13	21	18	21	24	16	19	25
ZINC		83J	69J	38J	45J	47J	51J	93J	130J
MERCURY		2.4	1.5	1.5	2.8	6.5	0.38	2.0	1.5
ALUMINUM		4500	10000	9500	10000	10000	9000	7800	14000
MANGANESE		59	90	60	47	50	190	170	770
CALCIUM		300	440	370	390	420	1400	1600	1800
IRON		12000	18000	13000	15000	17000	9500	22000	19000
MAGNESIUM		180	570	560	560	530	660	710	830
SODIUM		120	170	110	150	170	290	100	190
POTASSIUM		330	880	670	820	830	850	730	1000
CYANIDE		7	63	3.7	27	22	12	9.3	14

Data Qualifiers:

U = The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J = The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate. The value preceding the "J" is the estimated value.

N = There is presumptive evidence of presence of chemical, but the measurement can not be considered accurate.

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

TABLE 5-25 (cont.)

**SURFACE SOIL SAMPLING SUMMARY - INORGANICS
LANDES COMPANY PROPERTY AND NORTHEAST TRIBUTARY AREA
TENNESSEE PRODUCTS SITE
CHATTANOOGA, TENNESSEE**

CHEMICAL	Sample ID:	NET-09	NET-10	NET-10 (DUP.)
SILVER		0.33J	1.1J	1.8J
ARSENIC		19	22	21
BARIUM		170	200	220
BERYLLIUM		1.2J	1U	0.17J
CADMIUM		2U	0.13U	0.15U
COBALT		36	1.6J	1.4J
CHROMIUM		80	18	17
COPPER		100	100	140
NICKEL		22	18	20U
LEAD		220	670	780
SELENIUM		9.6J	16J	20JN
THALLIUM		2U	4.2	4U
VANADIUM		20	5.1J	5.8J
ZINC		300J	15J	15J
MERCURY		1.8	11	7.2
ALUMINUM		10000	350	520
MANGANESE		950	78	83
CALCIUM		4400	370	480
IRON		33000	54000	54000
MAGNESIUM		640	59	82
SODIUM		210	2400	2200
POTASSIUM		720	2300	2400
CYANIDE		64	180	260

Data Qualifiers:

U = The chemical was analyzed for but not detected. The value preceding the "U" is the minimum quantitation limit.

J = The qualitative analysis of the chemical is acceptable, but the value can not be considered as accurate. The value preceding the "J" is the estimated value.

N = There is presumptive evidence of presence of chemical, but the measurement can not be considered accurate.

Concentrations presented in mg/kg. Concentrations printed in bold italicized text are considered to reflect a valid detection of unnatural contamination.

were also detected in SS-90. Samples SS-89 and SS-90 also contained 2,4-dimethylphenol. 2-methylnaphthalene was detected in SS-87, SS-89 and SS-90. Carbazole and dibenzofuran were detected in all the samples. 2-Methylphenol was detected in only SS-90 and SS-91, and 3-and/or 4-methylphenol was detected only SS-91.

5.3.7 NORTHEAST TRIBUTARY

The analytical results for the ten soil samples collected along the banks of the Northeast Tributary in December 1996 are shown in Tables 5-23 through 5-25. Sample NET-10, located closest to the site, was the only sample that contained VOCs . That sample contained benzene (120 ug/kg), toluene (140 ug/kg) ethylbenzene (9 J ug/kg) and total xylenes (160 ug/kg). All ten samples contained high concentrations of PAHs and trace levels of pesticides. The concentration of total PAHs ranges from 219,600 ug/kg at NET08, located approximately 400 ft north of Hamill Road, to 9,394,700 ug/kg at location NET02 located approximately 75 ft from Chattanooga Creek. There is no apparent pattern to the PAH contamination from these spoil piles. Although alpha BHC, gamma BHC, delta BHC, dieldrin, 4,4' DDE, and endosulfan II were detected in one or more samples at relatively low levels, methoxychlor, however was detected all 10 samples ranging in concentration from 1600 to 78,000 ug/kg. No significant concentrations of metals or cyanides were detected.